

# COAL AGE

Vol. 4

NEW YORK, SEPTEMBER 6, 1913

No. 10

Everyone must admit that the miner at the working face, in most mines, can load clean coal if he wants to. It is true that in many seams, this would require great care on the part of the miner, and would reduce his possible tonnage earnings considerably, but the fact still remains that he *could* load clean coal, if he so desired.

Now, that being the case, why shouldn't we see to it that he does load clean coal?

"We try to do that very thing," says one superintendent, "but we have about decided to give it up as a bad job." When you hear a man talk that way, you may depend upon it that he has centered all of his activities on his dockage system, and in the end he has found that the tighter he draws the deduction rules, the dirtier his coal becomes.

In contrast to that man's method, let us examine another operator's system: When this manager found that his markets were gradually slipping away from him, because of dirty coal, he began to install various mechanical devices. His product began to improve somewhat, but his working capital suddenly threatened to disappear altogether, and he realized that if the mechanical pickers required further nursing, it would soon be up to his creditors to furnish the nurse.

Then the thought suddenly came to him, that he had begun his experiment at the wrong end. He immediately employed several conscientious inspectors, and with them he made a careful study of conditions inside the mine.

They found that with very little extra effort the miners could load clean coal.

Then they calculated the loss, due to the fact that the coal was not being properly loaded. They considered: (1) interest on special equipment (pickers, separators, etc.); (2) wages of picker boys; (3) reduced price of the coal due to the excess dirt that it contained, in spite of all the mechanical equipment; (4) losses due to coal absolutely rejected after shipment. They divided this total loss by two, and made the miners a proposition to increase their digging price per ton by that amount, if they would agree to clean the coal. The miners jumped at it, *and they loaded clean coal.*

We realize that this is a broad question. In many seams, it might be cheaper to load dirty coal, and depend upon mechanical devices or washers to clean the product, rather than pay the increased mining rate that would be required. But even under such conditions, proper supervision at the working face will work wonders.

Investigations as to what constitutes reasonably clean coal in any seam are only successfully handled by practical men, and herein probably lies the explanation for the scarcity of such investigations.

Managers whose experience had its beginning in the engineering department, are easily interested in mechanical devices of all descriptions (the improvements in coal washers, screens, picking tables, etc., worked out by these men during the past few years, are truly remarkable), but the possibilities for improving conditions by instructing men, are often unappreciated by them—"More's the pity."

## IDEAS AND SUGGESTIONS

### Facts about Gas Poisoning

BY L. K. HIRSHBERG\*

Dr. Morris Fishbein, of Chicago, recently, while testing the blood of a man fatally poisoned by the inhalation of illuminating gas, studied the effect of formaldehyde on the carbon monoxide. By the use of chemical examinations, as well as the spectroscope, he investigated the blood of individuals poisoned and afterward embalmed in formalin, normal blood, normal blood in which formalin was present, and normal blood through which gas was passed, and the blood of tissues suspected to have been killed by carbon-monoxide poisoning.

By boiling blood with CO, it is known that a brick-red mass is formed. Healthy blood becomes brown-black. Formaldehyde in the usual amounts does not interfere with this test. Blood with formaldehyde or carbon monoxide does not clot as readily as normal blood.

Doctor Fishbein found that old spots of suspected blood must be diluted with lots of water to make a fair examination.

Dilution of the blood is advisable in order that a clear spectrum may be observed. Whenever carbon monoxide is present, the spectrum may be observed after a little practice, the presence of small amounts of formaldehyde having no effect. Formaldehyde in larger quantities acts as a reducing substance, and when the quantity of carbon monoxide present is not large, the spectrum of reduced hemoglobin may be found. In the case of normal blood, various quantities of formaldehyde produce the various spectrums of oxyhemoglobin, some of which are distinguishable only with great difficulty from the spectrum of carbon-monoxide blood, until sufficient formaldehyde is added, when the spectrum of reduced hemoglobin is produced.

In view of the fact that formaldehyde was found to modify more or less completely all the chemical tests, and to act as a reducing agent when present in large amounts, so as to interfere also with spectroscopic examinations, it was thought best to make a brief report of these examinations. From Doctor Fishbein's experience with the various tests under these conditions, it would seem that the test, namely, dilution of the blood one part to four parts with water and shaking with three times the volume of 1 per cent. tannic acid, whereby normal blood becomes gray and carbon-monoxide blood remains red, is most reliable and trustworthy in the presence of formaldehyde. In case no formaldehyde is present, the addition of four volumes of lead acetate will be found to yield satisfactory results. Spectroscopic observations are of little value unless preceded by many observations on the various forms of hemoglobin.

Dr. Fishbein records the conditions in the following instances of gas poisoning:

The patient, subjected for several hours after exposure to the action of the pulmotor, which has seemed to be of

great efficiency in many cases, remained comatose. On admission to the Cook County Hospital, 12 oz. of blood were withdrawn and intravenous transfusion of saline solution was made. During a period of four days, normal saline solution by the drop method was given practically continuously. The patient remained unconscious throughout. The condition gradually grew worse and he died, nearly five days after the exposure to the gas.

Carbon monoxide was demonstrable in the blood by the various tests, chemical and spectroscopic. This is of special interest in view of the fact that many authorities hold that carbon-monoxide blood loses its characteristics when exposed to the air, whereas, in this case, it was found even though the person lived five days after removal from the gas. Ordinarily, if the patient lives, the carbon monoxide is eliminated within a few hours, although carbon monoxide in the blood seven days after the exposure to the gas has been mentioned. Few such are reported; probably a further study would show many instances of this nature.

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### Holding Men

BY WEST VIRGINIA SUPERINTENDENT

The principal of a preparatory school was receiving in his office a call from the father of two boys who had been suspended from school for a short time on account of some violation of school discipline. The old gentleman had been a miner for many years, had saved his money, leased a small tract of coal, opened a country bank, hired a miner to help him dig, and, from this beginning, had hired more men, built shanties, houses and mine buildings, installed equipment and prospered.

As is usually the case, having little school training himself, he was anxious that his boys should become educated in the shortest possible time, and was much put out that there was to be any interruption. He wanted the boys cowed, put on short rations, denied privileges—any of the list of school punishments save suspension. The principal was firm, or perhaps stubborn, and after much argument the father gave up, saying, "Professor, maybe you are right. I don't know nothing about teaching, but in my business I have always made it a rule never to give the men nothing they ask for."

"Sometimes they may be reasonable, and then again they may be unreasonable, but it's all the same, I never give in to nothing. Sometimes they say the rent is too high. Then I say, 'When I built them houses I left a hole in the side to come in by and to go out by, and when you think the rent ain't right, you can just go out by that hole,' and," he concluded, justifying his policy, "they all love me like a brother."

This latter statement was more nearly the truth than one might suppose from the outline of his policy, and thereby hangs the reason for this lengthy introduction. By loving him like a brother, the old man meant that he had no trouble keeping men, that they were satisfied

\*Baltimore, Md.

and felt that they were getting a square deal, in other words, having dug coal himself, he anticipated the needs of his employees and was a keen judge of the merits of a "kick." His men undoubtedly liked him, and he held them in his employ.

#### ANOTHER TYPE OF MANAGER

There is another type of mine manager who, imagining that all men are "kickers" and that all complaints are alike, attempts to follow the policy of refusing all requests, and does not succeed in getting himself loved like a brother, but loses his men and gets such a reputation for himself that no new men apply.

The next superintendent, hearing him cussed and discussed, sets about correcting the mistake by being so easy that his concessions beget inequalities and make his refusals seem arbitrary and partial. He is beset daily with trivial complaints and ends by losing control of discipline, and is literally "run off the job."

Then comes the "liar." He promises with no intention of fulfilling his word. Possibly he intends to look into complaints and requests, but his intentions are not serious enough to make him remember. Of all types he is the most exasperating. Possibly he makes good a sufficient number of his promises to keep men thinking that perhaps their particular requests may fall under the one sometimes granted, and they hang on for a while.

Some managers of men even advocate the "promise system." They say, "Why, hell, yes, always promise. What is the use of arguing? Agree to everything and then do as you please." Strange to say, once in a long while you will find a man of the Ananias type who is wonderfully successful. He has been so consistent in the failure to fulfill his promises that his men do not expect anything, and take his jovial assurances much as the refusals of the old man whose men loved him like a brother. The secret of his success is the same as in the former case. He is a good judge of a "kick," and knows when a man is working at a disadvantage.

#### THE NEW SUPERINTENDENT

Then there is the new superintendent, who imagines he has come to correct the faults of his mine foreman. He begins by granting requests that the mine foreman has refused, and soon he is besieged with, "My place no cut"; "water in my place"; "no gotta turn"; "driver no good"; "too much push for car"; "all time slate come down"; "no car to clean up my place"; "lika new buddie my place"; "no catch nothing for clay vein"; "short six cars this time"; "right away finish."

If the superintendent is really going to arbitrate these cases, he must have the same means of judging them as has his mine foreman. Possibly the complaints are genuine, and the foreman may, or may not be in touch with the various situations. Anyway, it is taking a long chance for a superintendent to attempt to judge independently. But, if he is a good inside man, he may be invaluable in helping keep a check on the cause of dissatisfaction, and by assuming certain responsibilities, take much worry off of his foreman.

In these days of machine coal, when a miner's kit consists of a pick and shovel, and his family is in the old country, it takes only a shade of difference in management to send him on his way to another mine, and it is

not so much the granting of requests and privileges that holds men as it is the maintaining of a condition that does not admit of privilege. The best-paid man on the job quits, not because he is not paid enough, but because someone else has an advantage over him. It may be easier to keep a mine full of diggers where there is a uniformly unfavorable condition than where some of it is good and some bad; nor need this principle be confined to miners alone.

#### OVERCOMING DIFFICULTIES WITH MACHINERY

An agent for a hoist for cars on steep room pushes recently made the statement that the steep push was the greatest hindrance to holding men in the low-vein coal, arguing that his hoist would overcome this difficulty. But there is a question whether the inequality of working conditions brought about by installing a limited number of hoists in steep rooms would not leave the situation the same as before. Of course, we are not talking about the impossible grades. A room with a hoist, if it presented an advantage, would present also an inequality, and the inequality is what makes men refuse to work. We have all had the experience of having a butt of steep rooms worked up until some rooms show a lighter grade, and then it is all off. It is difficult to get the two grades worked side by side.

Some student of economics might say, "Yes, but why not pay a better price for the steeper rooms?" The miner himself knows that it would be harder for him to set a price on a room grade that would make it equal to some other grade than it would be to change the dip of the coal. He might just as well advocate rain for the just and drought for the unjust, or guess at the conditions the next cut will reveal. Probably the best way to make the conditions equal is to drive rooms off along the strike from another room.

Roller-bearing wheels might lighten the push for everyone and would be a distinct advantage for the whole, but it would not adjust the inequality. I am not sure but that if each superintendent and manager knew exactly what salary the other was getting, there might be as great a dearth of material for these positions as exists at the mines presenting unequal working conditions. Men do things because "everybody's doing it." A mine with one rate and equal working conditions would be too good to be true, but to hold men at any given mine, seems to be a question of approaching such an ideal rather than giving fancy prices for bad stuff, wet rates where ditching could be done, and yardage where good service to the miner might make his working condition better.

The old fellow whose miners loved him like a brother may have met this problem in his own crude way, but he held men without handing out a lot of "sugar."



The points to be considered when laying out a haulage system are: (1) nature of the roof; (2) output per day; (3) grade; (4) number of branch roads and their distance from the shaft; (5) initial expense. Where the roof is good, double tracks are practical, and the endless-rope system gives good results, as there is a constant supply of loaded cars at the shaft bottom and empties in the chambers, which means a large output. This system permits the working of any number of branches together or separately. It can be used where the grade is steep as well as on the level. While the initial cost is high, the long life of the rope, the use of small engines, the low per cent. of accidents, and the increased ventilation tend to render this system efficient, durable and cheap.



# The Atlas Co.'s Plant at Burgettstown, Penn.

BY LEE LLEWELYN\*

*SYNOPSIS—The first of two articles on this interesting plant. It is one of the newest operations in Pennsylvania and the equipment is modern in every respect. This installment takes up the general conditions prevailing in the field and outlines the scheme of operation.*

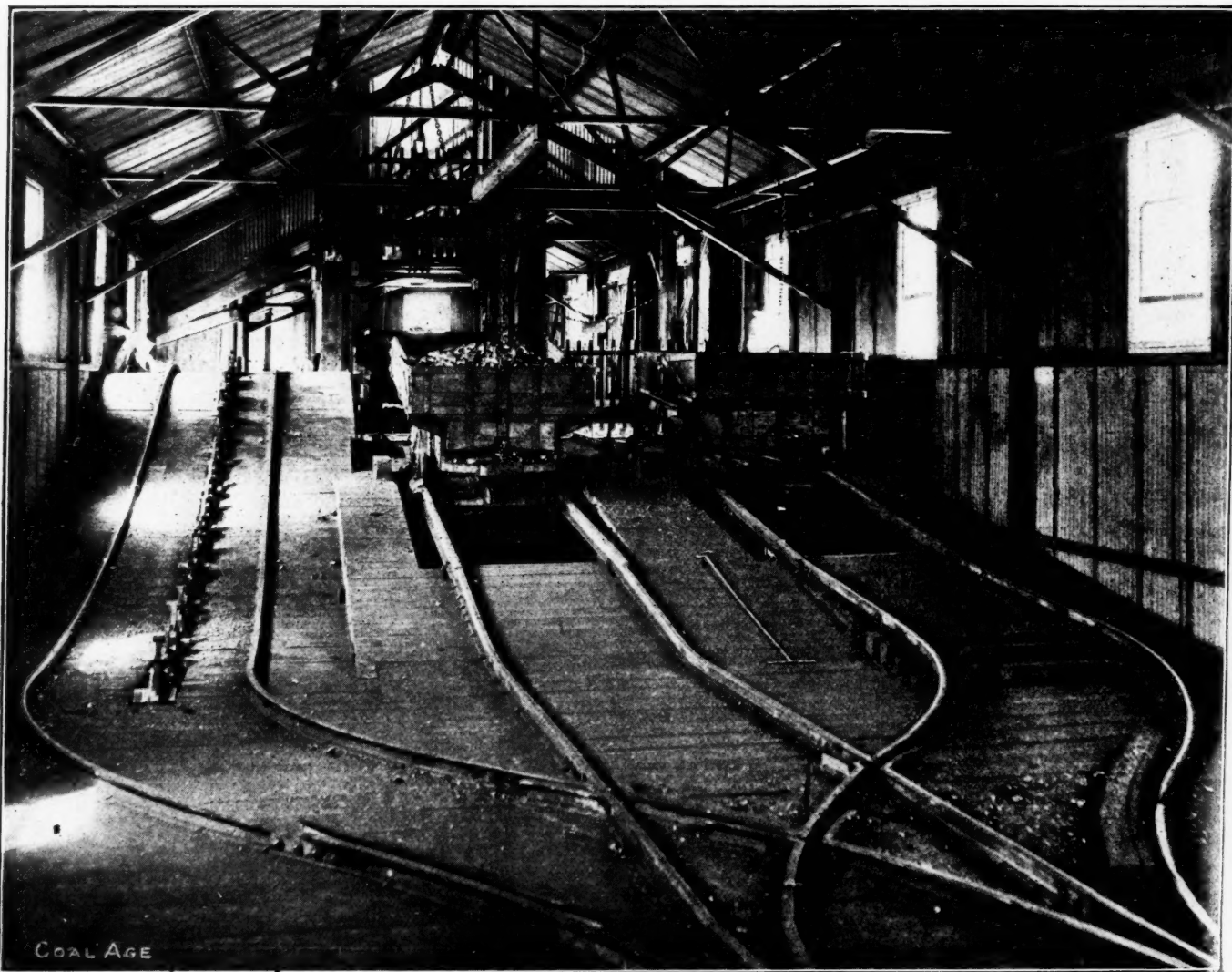
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This operation is located on Raccoon Creek, about four miles from Burgettstown, and has connections with the Pan Handle railroad. The officers are: George Z. Ho-

seam, which is from 5 to 6 ft. thick and 270 ft. below the surface. The other is what is known as a "Rooster" seam and is peculiar to that particular field; it is about 4 ft. thick and lies immediately above the Pittsburgh seam, some 4 to 5 ft. of strata intervening. It is the company's intention to work both seams.

## SHAFTS AND SURFACE EQUIPMENT

Both shafts are 12x24 ft., the air shaft being located



## VIEW OF DUMPS AND CHAIN HAUL FOR RETURNING THE EMPTIES

The arrangement is such that one man and a helper can handle the full capacity of 3000 tons per day.

sack, president; James B. Haines, Jr., vice-president; John A. Bell, Jr., secretary-treasurer; and W. A. McBride, superintendent. The engineers for the company are Smith and Lewis, Oliver Building, Pittsburgh, Penn., who were engineers in charge of the construction of the entire plant.

The company owns 1700 acres of coal and 300 acres of surface, upon which the plant and town are built. The name adopted for the town is Atlasburg. There are two seams of coal. One is the famous Pittsburgh

\*Chief engineer, Pittsburgh Coal Washer Co., Pittsburgh, Penn.

1000 ft. distant from the main shaft. Tracks are provided at the main shaft bottom for 200 loads and 200 empties. The cars operate by gravity at this point and require but two men.

The main hoisting engines are two 26x36 in. Vulcan, direct connected to 7x9-ft. conical drums. The air-shaft engine is a double 15x24 Vulcan, direct connected to a 7-ft. cylindrical drum. The cage operating in the air shaft is counterweighted and is used for hoisting men and supplies, but coal was hoisted during the construction of the main tippie.

The building housing the power plant is 45x120 ft.,



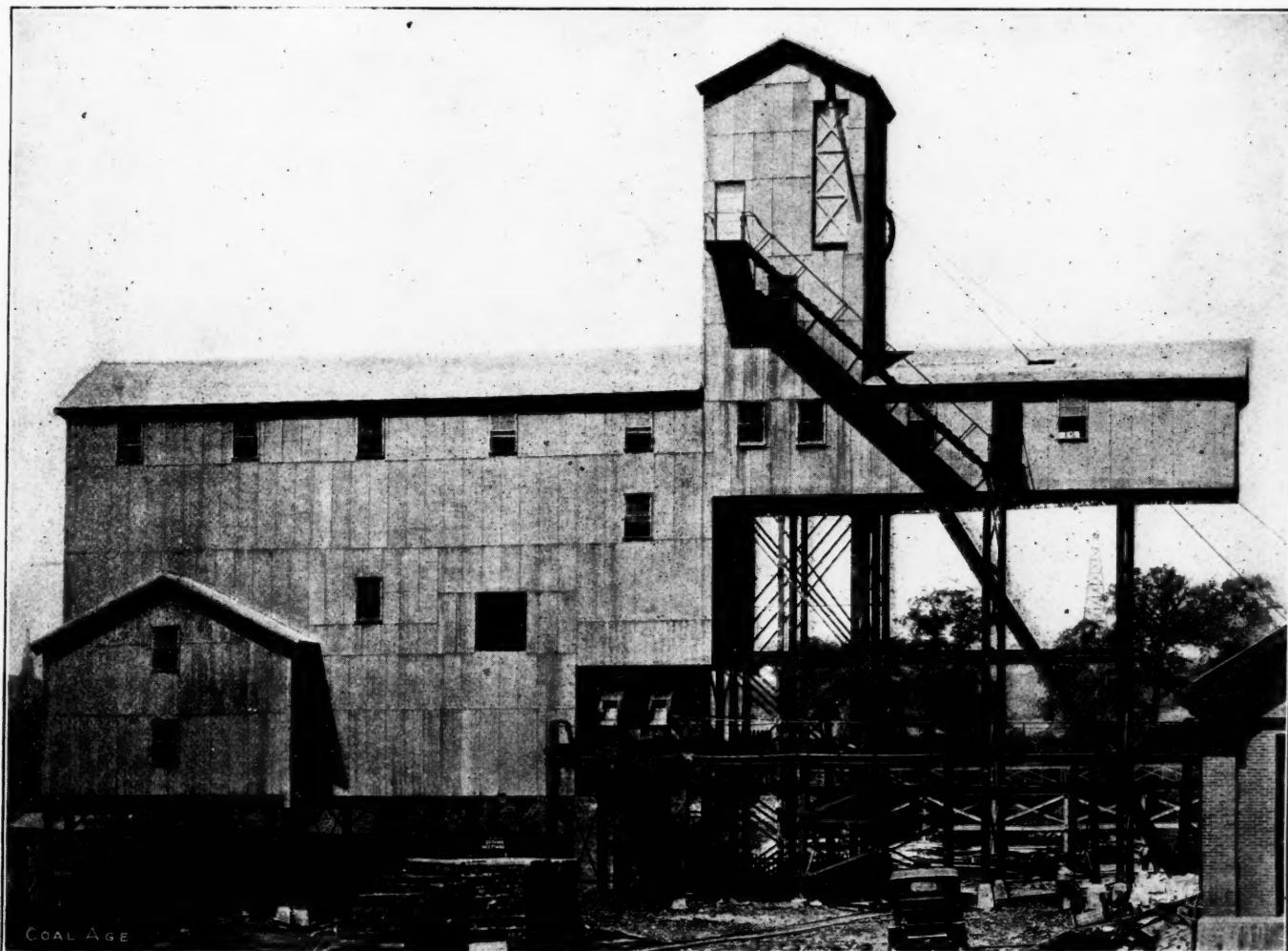
with a partition separating the boiler room from the engine room. It is of brick construction, with concrete floors. The boiler room contains four 300-hp. Erie City watertube boilers, equipped with Jones underfeed stokers, two Epping-Carpenter boiler-feed pumps, and a Hopper's feed-water heater of 2000-hp. capacity. The boilers operate under 150-lb. steam pressure. The engine room contains two 250-275 compound-wound generators of the General Electric make, driven by two 17x24-in. four-valve, Erie City engines.

The shop building is 45x75 ft., of brick construction, and is equipped with forges, hammers, pipe machine, drill presses, etc., for making the necessary repairs.

burgh district. No expense was spared in providing the employees with comfortable homes. The houses are single and of different designs and are located on lots 60x150 ft., with 60 ft. streets. The store building, which is a handsome brick structure, is 45x100 ft. and two stories high. This building also contains the post office and superintendent's offices.

#### SCHEME OF OPERATION

Mine cars of three-ton capacity are hoisted from the coal seam to the tibble floor on platform cages, operating in a two-compartment shaft. The cages are provided with hinged bottoms, which are level while hoisting, but



VIEW OF TIPPLE, SHOWING BOILER-COAL BIN WITH TRESTLE AND ELECTRIC LARRY

Vertical doors in the headframe are to admit the sheaves and large opening in the side of the tipple is for the rock trestle now being constructed.

The mine fan is of the Jeffrey type, 16x5 ft., and driven by two 17x21-in. four-valve Erie City engines, and will have an ultimate capacity of 300,000 cu.ft. of air against a 6-in. water gage when operating at 160 r.p.m.; it is inclosed in a steel, concrete and brick building of pleasing design.

The motors are the General Electric type, equipped with cable and crab reels. Cutting machines are of the chain type and were manufactured by the Goodman Electric Company.

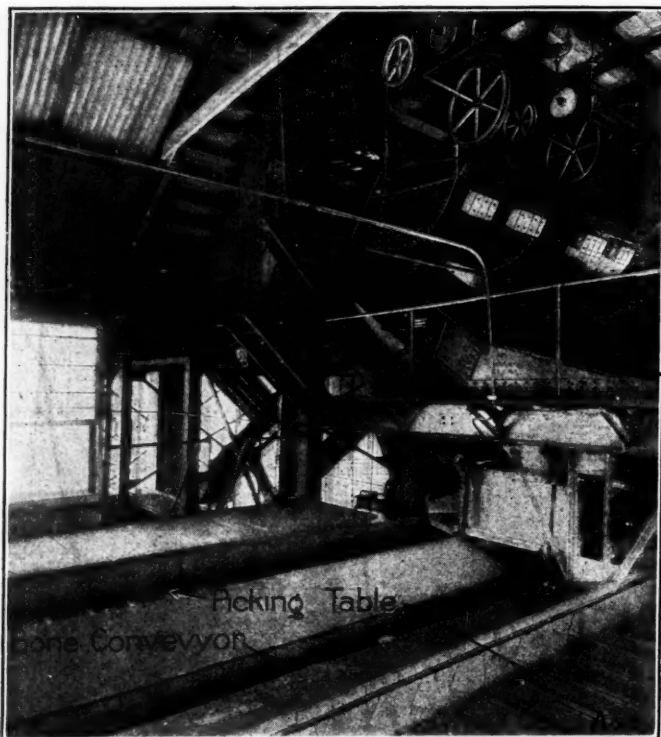
Owing to the advantageous location, and also the great care and expense gone to by the company, the town is one of the most excellent mining towns in the Pitts-

a separate set of landers are provided so that when the cages come to rest the hinged bottom is tilted to such an angle as will allow the loaded car to run off by gravity. The loaded cars gravitate to a Phillips crossover dump, of which there are two placed side by side, and are dumped into one of two sets of gravity-screen rigs. The empty cars pass on over dumps to a kickback and return by gravity, on one side of the tipple, to a chain haul, which elevates them sufficiently to run them to a second kickback behind the hoistways. From this kickback the cars gravitate to spring horns located behind each cageway. When ready to admit the car to the cage the operator presses a foot treadle which releases the

horns and the car runs onto the cage for return to the mine.

There are two dumps, two screen rigs, two feeders, and two picking tables, with the dumps setting opposite to each other. The run-of-mine coal is dumped into a chute equipped with a set of standard screen bars having 1 1/4-in. spaces. The screened coal passes to weigh baskets, where it is weighed and then deposited in a chute common to both weigh baskets, terminating in two hoppers fitted on the bottom with plate feeders for feeding the coal to the two picking tables running parallel to the railroad tracks.

The bone is picked from the coal by pickers walking on the tables, and thrown onto a pan conveyor, located between and running parallel to the two tables, conveyed to the back end of the picking house, and dis-



SHOWING WEIGH BASKETS, FEEDER HOPPER, PICKING TABLE AND BONE CONVEYOR

charged onto a similar conveyor running at right angles, which in turn conveys the material to a roll crusher. The crushed bone is then elevated to a storage bin, from which it is taken by an electric car to the boiler house for use in boilers. The picked coal passes from the picking tables to cars over the special loading chute arranged for loading cars 8 ft., 10 ft. and 11 ft. 6 in. high.

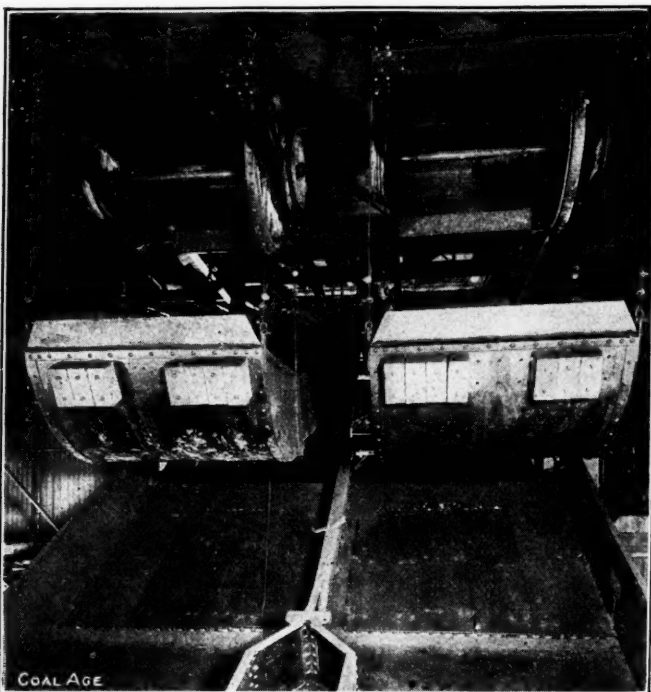
The 1 1/4-in. screenings from each rig, drop onto a set of nut-bar screens having 3/4-in. spaces, where separation into nut and slack takes place. Each product is collected in chutes, common to both screen rigs, and loaded in railroad cars on their respective tracks, the chutes being fitted with proper gates for stopping the flow of coal when shifting cars.

Provision is made for two egg screens in the hopper under the weigh baskets, so 3-in. egg coal may be made on both rigs and loaded on the nut track, separate, or mixed with the nut, or with the nut and slack. The upper end of each slack chute is a short section of per-

forated screen for taking the real fine dust out of the slack coal. This dust is collected in a chute and passes to a cross-bone conveyor, thence to an elevator leading to the storage bin for boiler-house use.

When desired, the nut coal, or the nut and slack mixed, from either screen rig, may be put on their respective picking tables, producing either 3/4-in. lump or run-of-mine, the fine coal being loaded on the tables underneath the lump to facilitate picking. With these screen rigs it is possible to make the following loading combinations:

- 1 3/4-in. lump on either lump track.
- 2 1 1/4-in. lump on either lump track.
- 3 Run-of-mine on either lump track.
- 4 Nut on nut track.
- 5 Nut and slack mixed on nut track.
- 6 1 1/4-in. lump on nut track.
- 7 3/4-in. lump on nut track.
- 8 Run-of-mine on nut track.
- 9 Egg on nut track.
- 10 Special run-of-mine (consisting of egg, nut and slack) on nut track.
- 11 Nut and egg mixed on nut track.
- 12 3/4-in. or 1 1/4-in. slack on slack track.



THE WEIGH BASKETS (WITH THE EGG SCREENS BELOW) AND CHUTES TO THE FEEDER HOPPER

Of the above combinations, Nos. 6, 7, 8, and 12 may be loaded without operating the picking tables. Provision is made in the upper end of the screen rigs for bypassing room cleanings to the bone conveyor, and rock to the rock bin under the dump, from where it passes to the rock car.

#### PRINCIPAL PARTS

The principal parts entering into the construction of the tippie and air hoist are as follows:

- |   |  |
|---|--|
| Two special cages for main tippie.      | Two plate feeders.                             |
| One counterweighted cage for air hoist. | Two picking tables.                            |
| Four sets of landers for main tippie.   | Two bone conveyors.                            |
| Two sets of landers for air hoist.      | One bone crusher.                              |
| Two head sheaves for main tippie.       | One bone elevator.                             |
| Two head sheaves for air hoist.         | One storage bin.                               |
| One empty car haul.                     | One main headframe and tippie.                 |
| One system of tippie tracks.            | One air hoist headframe.                       |
| Two Phillips cross-over dumps.          | One 3-ton electric traveling car and runway.   |
| Two gravity screen rigs.                | Two car-releasing mechanisms for shaft bottom. |

The cages are of the platform type and provided with hinged bottoms. They are built to conform to the new mining laws of Pennsylvania and equipped with Lepley's patented steel-wedge safety device with double springs. They have forged-steel rope sockets 16-in. long, forged-steel safety clamps, 1-in. bridle chains, 3/4-in. safety chains, and horns to secure the car when hoisting and receive the empty car when caging it. These horns remain in position until released by the operator to allow the loaded car to run off the cage, and then return automatically to their initial position for receiving the empty car. Steel side plates, 1/4 in. thick by 4 ft. high, run the full length of the cage. Hand rails are provided on either side and safety chains across both ends. A steel canopy top is provided, with one side hinged to turn up for accommodating long material.

Cages were built by the Connellsville Manufacturing & Mine Supply Co. from plans furnished by the Pittsburgh Coal Washer Co. This same company also furnished the head sheaves, which are 10 ft. in diameter and heavy pattern, bicycle-spoke type, mounted on an 8-in. hammered-steel shaft, supported in heavy cast-iron, babbitted pillow-blocks equipped with adjustable sole plates.

The tipple tracks are constructed of 30-lb. American standard rails and are secured to the 3-in. oak floor by standard railroad spikes. Back of the hoistways a special automatic switch is provided for diverting the empty car to the proper hoist. The empty car going onto the cage sets the switch for the next car.

The dumps are of the Phillips extra heavy crossover type. Special dumping rings are provided for operating the car doors, which are of the lifting type. The rings are operated automatically by the in-going loaded car, thus relieving the dump operator of the extra work of handling them. The car haul is on about 40-ft. centers and consists of a 12-in. pitch steel-link chain, which has cast-steel pivoted dogs inserted in it every 2 ft. for engaging attachments on the bottom of the car.

(To be continued.)

## Waste-Heat Losses in the Connellsville Region

E. W. Parker, statistician of the U. S. Geolo. Survey, has compiled the following\* interesting memorandum concerning waste-heat losses in the Connellsville region:

The production of coke in the Connellsville and Lower Connellsville districts of Pennsylvania in 1911 amounted to 16,919,749 short tons, to produce which in retort ovens would require about 9300 such ovens. These operated as "waste-heat" ovens would produce approximately 180,000 boiler horsepower per hour.

Through the courtesy of the late R. N. Durborow, general superintendent of motive power of the Pennsylvania R.R. Co., the writer has received estimates of the quantity of drawbar horsepower developed by some of the locomotives of that company during 1910. Mr. Durborow states that it required about 32,358 drawbar horsepower as the average during the month of March, 1911, to haul the freight trains over the portion of the Pennsylvania system between Pittsburgh and Harrisburg. For the

passenger trains 9762 drawbar horsepower is required, the total drawbar horsepower developed per day being 42,120. The efficiency of transmission from the power house to substations on the line would be about 82 per cent. for the distance between Pittsburgh and Harrisburg, and for 42,000 drawbar horsepower. The efficiency of the distributing system between the substations and the locomotives would be about 85 per cent., and the efficiency of the locomotive itself would be about 75 per cent. The power that would reach the drawbar of the locomotive and thus be available for a train would, therefore, be about 52.3 per cent., this being the product of 82 by 85 by 75 per cent. Assuming, therefore, that 42,000 drawbar horsepower is 52.3 per cent. of the power-plant horsepower, sufficient to move the traffic, 80,000 hp. would be required at the power house.

### HORSEPOWER DEVELOPED BY DIFFERENT CLASSES OF LOCOMOTIVES

Mr. Durborow was kind enough to submit the following tables, giving the estimates of the horsepower developed by the different classes of locomotives, hauling freight and passenger trains, during the month of March, 1911, from which the foregoing estimates have been deduced:

#### FREIGHT TRAINS, MONTH OF MARCH, 1911

No. of trains per month	Average running time (hours)	Locomotive class	Average horsepower	Total horsepower hours per month of 31 days
Altoona and Harrisburg, eastbound:				
686, slow.....	10.80	H-8	650	4,815,720
439, preferred.....	8.85	H-6	600	2,331,090
Altoona and Harrisburg, westbound:				
608, slow.....	11.36	H-8	650	4,489,472
393, preferred.....	8.35	H-6	600	1,968,930
Altoona and Pittsburgh, west and eastbound—all freight trains:				
1851.....	8.76	H-6	600	9,728,856
130.....	8.76	H-8	650	740,220
Total trains 4107.....				24,074,288

744 hours in 31 days;  $\frac{24,074,288}{744} = 32,358$  horsepower required any instant.

#### PASSENGER TRAINS, MONTH OF MARCH, 1911

Altoona and Harrisburg, east and westbound:				
1777.....	3.03	E		2,423,828
533.....	3.03	K	650	1,066,000
Altoona and Pittsburgh, east and westbound:				
1247.....	3.30	K	600	2,715,966
712.....	3.30	E	450	1,057,320
Total trains, 4269.....				7,263,114

$\frac{7,263,114}{744} = 9762$  horsepower required at any instant.

From the foregoing it appears that the quantity of power which might be obtained from the coking operations in the Connellsville and Lower Connellsville districts by substituting nonrecovery retort ovens for the beehive ovens would be more than twice the quantity of power necessary to move every train on the Pennsylvania R.R. between Pittsburgh and Harrisburg.

This estimate is, of course, roughly calculated as the efficiency of a power plant will range from one-half horsepower per boiler horsepower in a small simple non-condensing engine to three horsepower in the best compound-condensing engines. The power used on the railroad is not uniform, the rate of fuel consumption varying during all hours of the day and from day to day. Moreover, the conversion of boiler horsepower per oven into dynamometer (drawbar) horsepower may differ considerably in practice, but, allowing for all possible errors and variations, the enormous waste of energy now obtaining in the coking districts of Pennsylvania is glaringly apparent.

\*"The Manufacture of Coke in 1911." Government Printing Office, Washington, D. C.



# Coal Shipping on the Great Lakes

By I. C. CUVELLIER\*

*SYNOPSIS—This installment takes up the situation at the Head of the Lakes. The "Twin Harbors" last year handled some 40 million tons of freight, or more than the total foreign commerce cleared from the six leading Atlantic ports. Coal shipments for the current year will approximate 10 million tons. The docks are equipped with the most elaborate unloading machinery in the world, in addition to which there are large cleaning, screening and briquetting plants.*

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Duluth is a city crowding the 100,000 mark and stretching for twenty-five miles along the rugged, rock-bound coast of the Head of the Lakes. Shipping during the season of 1912 aggregated 41,474,776 tons of freight, 8,585,039 tons being coal, enough to fill an order of 161,000 cars placed end to end, making a train 1900

ally. At either entrance to the Twin Ports the largest steamers can enter, dock, unload and depart under their own steam and without the use of tugs, which in many other ports forms a heavy item of expense.

With the modern coal-handling equipment in use, unloading is done here with the maximum dispatch, the boats then passing directly to some one of the mammoth ore docks or grain elevators and taking on a fresh load. This situation always insures a line of the best and fastest vessels plying on the Great Lakes. The immense freight carriers, some of them as long as two ordinary city blocks, push their way through the channel entrance and land at some ore or coal dock without ceremony. It takes but a half hour to accomplish this and almost immediately the process of loading or unloading begins.

A further study of the accompanying map indicates



UNLOADING AND STORAGE PLANT OF THE NORTHWESTERN FUEL CO., AT SUPERIOR, WIS.

miles long, or long enough to reach from Duluth to Portland, Oregon.

Inseparably connected with Duluth, is the thriving city of Superior on the opposite side of the harbor. It is not at all disparaging to Duluth to say that Superior receives the larger amount of coal. A glance at the contour of the harbor, as can be seen by the accompanying map, shows the confluence of the St. Louis River with the Duluth side of the harbor forms what is known as Connor's Point, all of which is on the Superior side and extends into the bay proper, forming a most advantageous location for coal docks. Here are located many of the large coal-handling plants.

## NATURAL-HARBOR ADVANTAGES

There are harbor advantages here not enjoyed by any other port. Large vessels must necessarily seek freight where they can be accommodated and operated economic-

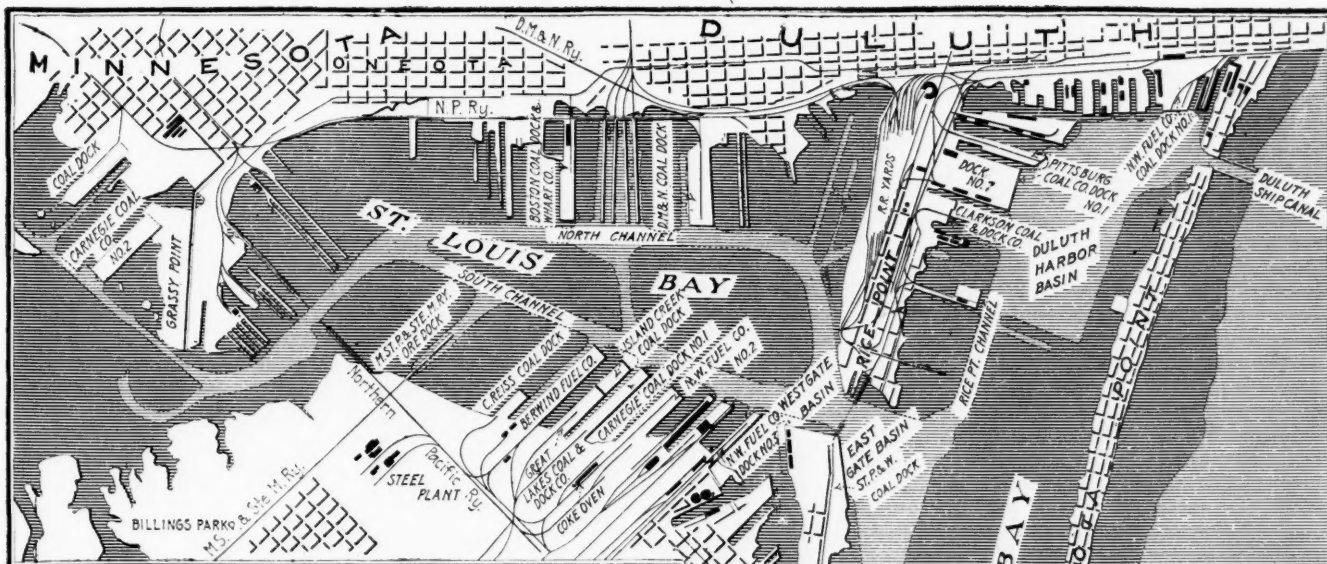
again how wisely nature had provided for this harbor. Stretching from the Duluth shore to the Superior side the sharp end of the Lake is cut off by a natural breakwater. This is a sand bar of sufficient width and height to make a more effective breakwater than could possibly be constructed by artificial means.

The docks located on the Superior side of the harbor received last year, from May to December, 5,680,288 tons of coal out of a total of 8,585,039 tons received at the Twin Ports. During the 235 days' open season in 1912, the net registered tonnage entering and clearing the Superior Harbor exceeded that in the foreign commerce of the ports of New York, Philadelphia, Baltimore, New Orleans, Boston and Charleston all combined.

## LAKE SHIPPING IN THE EARLY DAYS

In 1855, the date of the opening of the Soo Canal, the records show 1414 tons of coal passed through the canal that year, shipped in small lots, most of it going

\*Editor "The Coal Dealer," Minneapolis, Minn.



MAP OF SUPERIOR-DULUTH (TWIN HARBORS) AT THE HEAD OF THE LAKES

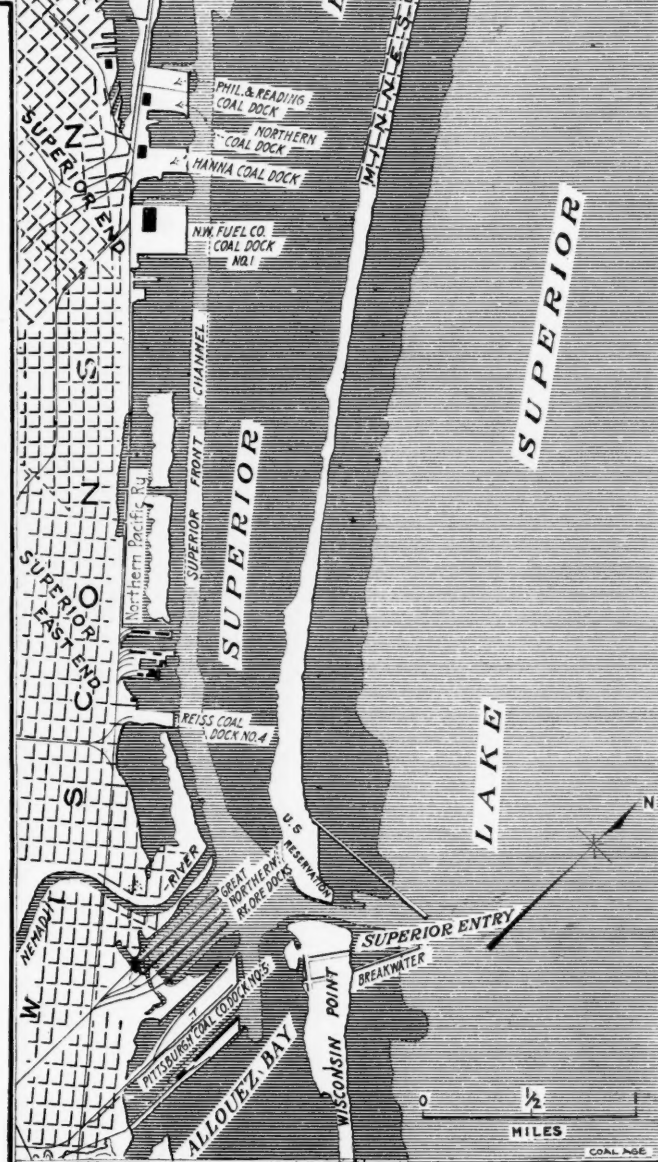
to the copper country in upper Michigan. Not until 1871 was coal handled as a commercial enterprise from lower Lake Ports to the Head of the Lakes.

In that year, the late E. N. Saunders, the pioneer of the coal industry in the Northwest, unloaded at Duluth about 3000 tons. Connected with him was the present well known railroad magnate, James J. Hill. It is interesting to note that at that time all the coal handled came up the Lakes in boats of from 300 to 500 tons carrying capacity, and the machinery provided for handling these cargoes was most primitive in character when compared with that in use at the present time.

The leading dock men expect that about 10,000,000 tons of coal will be brought by vessel and distributed over the Head of the Lakes during the season of 1913. This tonnage will be transported in vessels carrying 8,000 to 14,000 tons each, and with present unloading facilities, the largest cargoes can be discharged in from 12 to 24 hr. At one of the new modern docks, three of the largest vessels can be unloaded at the same time, the machinery being capable of taking the coal out of the beats and storing it on the dock at the rate of 2000 tons per hour. The record cargo last season was the "Wm. P. Snyder, Jr.," which contained 12,664 tons.

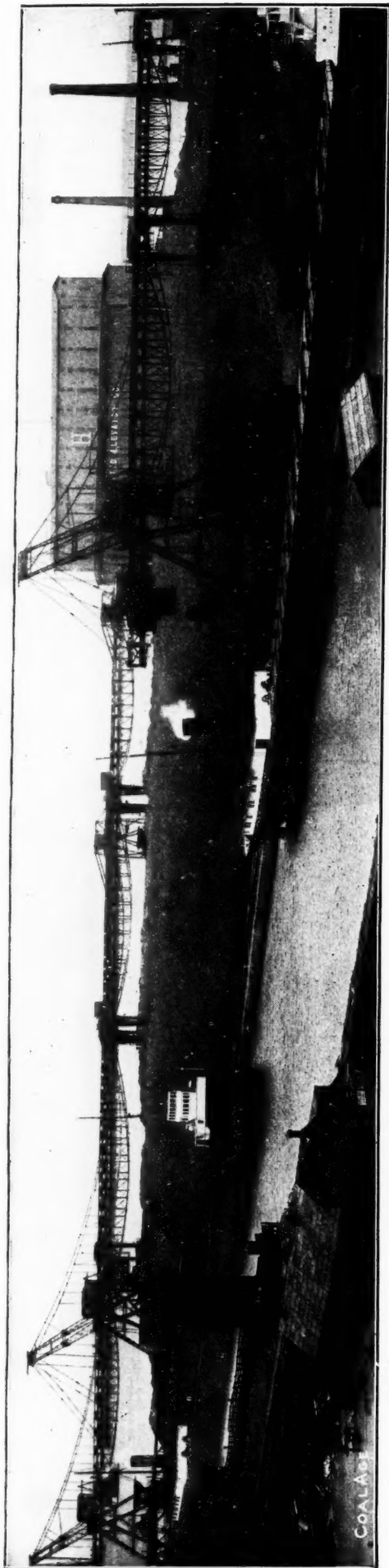
#### THE NORTHWESTERN FUEL CO.'S DOCK

There has just been completed on dock No. 1 of the North Western Fuel Co., the largest handling bridge in the world. This mammoth piece of work is the most modern device there is in the line of coal dock equipment. Docks planned and completed only three or four years ago, are already out of date. The length of this wonderful piece of mechanism is 755 ft. over all, length of span 551 ft., height from floor to top of truss, 131 ft. and the total weight, 3,000,000 lb. The bridge is supported by an inverted pier at one end and the shear leg at the other, thus taking up the least possible space. The entire structure is mounted on wheels which are driven by electric motors by which means the bridge is moved at the rate of about 200 ft. per minute, while traveling from hatch to hatch of a boat being unloaded, or from one point to another on the dock when loading the coal into cars.



The most modern type of man-trolley electrically operated and equipped, with complete air system for braking, will operate on the bridge, using a specially designed bucket for digging the coal out of the hold of the vessel and another for scraping it together in a pile and cleaning up the bottom of the hold.





PITTSBURGH COAL Co.'s No. 7 DOCK AT DULUTH, EQUIPPED WITH BROWNHOIST MACHINERY According to Different Grades, at the Twin Ports for the Current Season to Aug. 1

Month	Harbor	Anthracite	Yough.	Coal Receipts,	Pocah's	Splint	Cannel	Smithing	Unclassified	No. 8 Ohio	Total soft	Month	Harbor
Apr.	Duluth	28,720	81,224	7,293	11,976	12,003	2,774	2,774	180,537	10,818	98,511	Apr.	Duluth
May	Superior	42,716	77,349	7,028	78,434	19,556	816	816	180,537	10,818	97,280	May	Superior
June	Duluth	201,357	267,760	49,397	27,556	57,840	1,530	1,530	9,283	45,903	359,507	June	Duluth
July	Superior	87,492	335,681	132,681	107,952	39,894	3,075	3,075	96,526	78,795	713,443	July	Superior
Totals		160,907	362,846	143,199	35,550	84,943	4,150	4,150	46,497	64,506	526,526	Totals	
		56,833	334,100	77,421	100,021	54,522	3631	3631	260,843	302,299	877,336		
		249,760	413,280	107,739	362,089	303,051	12,045	12,045			632,050		
		909,933	2,128,572	587,103							781,287		
											4,085,940		

The digging bucket is of the clam-shell type and has a spread of 24 ft., while the clean-up bucket has a spread of 27 ft. The huge clam shell raises 10 tons of coal each trip and places it in the stock pile. In the early days this used to be considered a big car load. Heretofore six tons has been the limit of clam-shell capacity on the docks. This clam shell stands 17 ft. high, and four men standing on top of one another just reach the top. With this equipment the dock can unload a 10,000-ton cargo in 18 to 20 hr., which formerly would take 40 hours.

In the accompanying illustration is shown the coal-handling equipment of the Northwestern Fuel Co., installed several years ago by the Brown Hoisting Machinery Co.

As will be noted the equipment consists of four fast unloaders, three bridge tramways, and two electric-transfer carriages. The coal is unloaded from the vessels by means of grab buckets from which it is dumped into the hoppers on the piers. The pier spans two railroad tracks so that the coal may be either loaded directly from the hopper into railroad cars beneath, or into self-dumping tubs located on the transfer carriages. Each one of the bridge tramways consists of three spans covering the entire storage yard, and they are all equipped with a man trolley fitted with a 4-ton shovel bucket which is used in reloading the coal.

The self-dumping tub is picked up by means of the man trolley and conveyed to the desired place in the storage yard, where the coal is held for future shipment. The fast plants, transfer carriages and bridge tramways are all electrically operated and self-propelled along their respective tracks.

#### GROWTH OF THE LAKE SHIPPING

A glance backward over the tonnage handled in former years indicates a healthy increasing demand year by year. The records show receipts of both anthracite and bituminous at the Duluth-Superior docks as follows:

1909.....	5,662,107
1910.....	8,171,614
1911.....	8,434,905
1912.....	8,585,039

It is estimated by those intimately acquainted with coal distribution in the Northwestern territory that there is a yearly increasing demand of about 10 per cent. On the basis of last year's receipts this would mean a tonnage for 1913 of approximately 10,000,000 tons. With the improvements completed and under way, dock storage will be close to 10,000,000 tons, which means a possible handling capacity of over 15,000,000 tons. During the active season, much of the coal does not go into the stock pile; after unloading from the boat it passes through the screening operation and direct to cars for shipment to dealers' bins in the country. When there is a large tonnage going to the storage bins of the trade in the early part of the fall, when cars are plentiful, it gives the docks a chance to bring up a sufficient supply and store it for the heavy demand during the close of navigation.

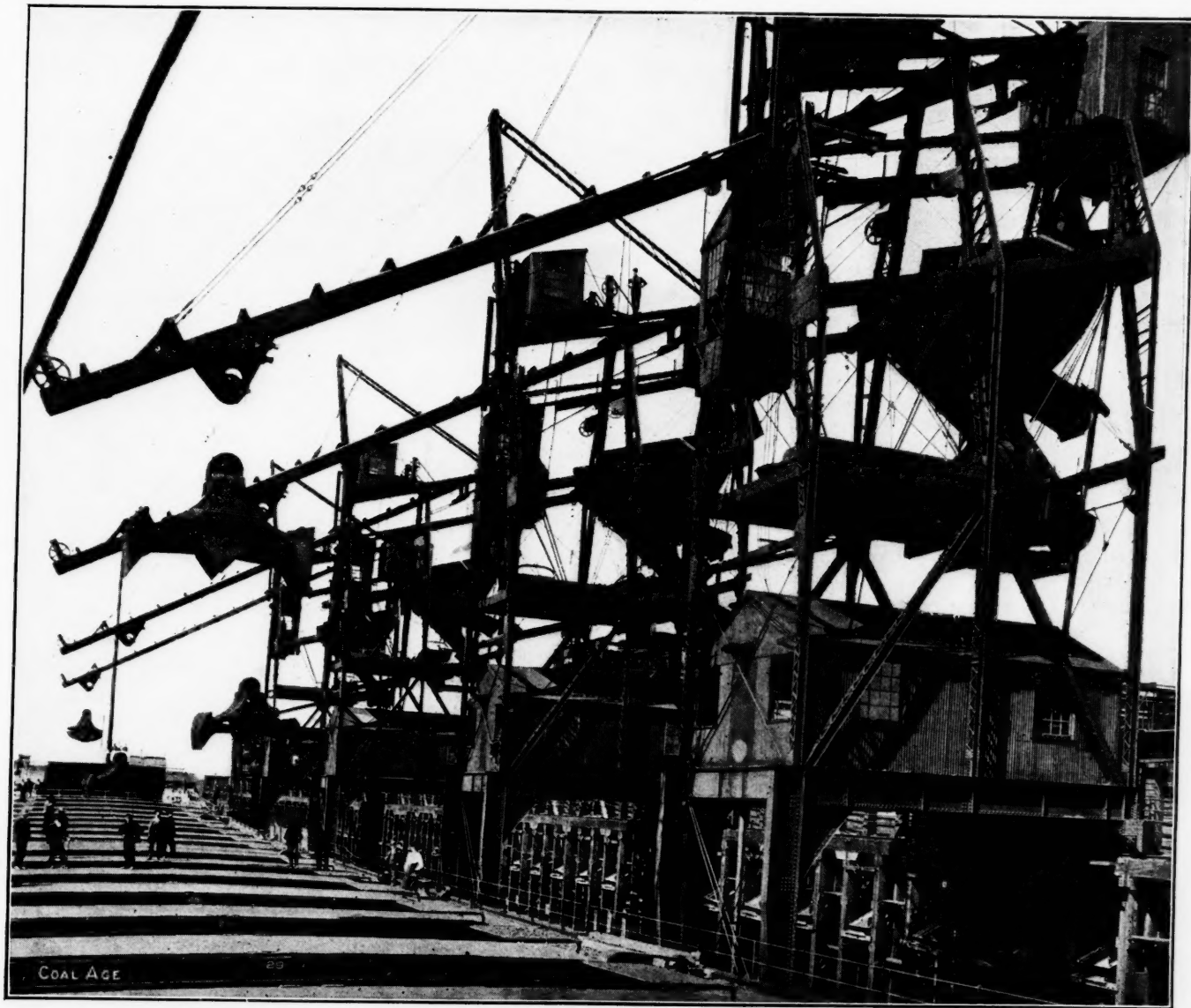
Until about five years ago, the distributors of coal from the Head of the Lakes were the Northwestern Fuel Co., the Pittsburgh Coal Co., the Lehigh Valley Coal Sales Co., the Philadelphia & Reading Coal & Iron Co.,



the Zenith Furnace Co., the M. A. Hanna Coal Co., the Northern Coal & Dock Co., and the St. Paul & Western Coal Co., distributors of Sunday Creek Hocking. Practically all of these have rebuilt their docks and put on modern handling equipment and substantially increased their handling capacity. Others have come in with modern dock facilities, such as the Berwind Fuel Co., making a specialty of Pocahontas Smokeless; the Carnegie Fuel Co. have also made rapid strides, having recently completed a large modern structure, and the latest addition

along Lakes Superior and Michigan, and the Clarkson Coal & Dock Co., who operate a dock at Ashland, Wis.

Formerly, the principal soft coals handled were Ohio Hocking and Youghiogheny, but now the West Virginia smokeless and splint coals form a large percentage of the tonnage, and of late years a strong demand has come for the high-grade coals from Kentucky-Tennessee, and large quantities of these are stored on the docks regularly. Ohio Hocking still has a firm hold on the consumer. It has been a popular domestic coal for many



BROWNHOIST UNLOADING APPARATUS ON THE NORTHWESTERN FUEL CO.'S DOCK AT SUPERIOR, WIS.

is the fine new dock of the Island Creek Coal Sales Co., which is devoted exclusively to their product.

#### BRIQUETTING AND VARIETY OF COAL HANDLED

The Stott Briquette Co. about five years ago started manufacturing anthracite screenings into merchantable briquettes, while the Berwind Fuel Co. has been successfully operating a large briquette plant, using their smokeless screenings. They are now putting up a duplicate of their briquetting plant. Other dock companies operating here are the Great Lakes Coal & Dock Co., who are about to make extensive improvements, the C. Riess Coal Co., of Sheboygan, Wis., operating a chain of docks

years, and in spite of the crowding in of others, the yearly tonnage holds about the same.

The territory reached from the Head of the Lakes is commonly designated as dock territory, reaching into the upper part of Wisconsin, all of Minnesota, northern Iowa, northwestern Nebraska, South Dakota, North Dakota and Montana. More dock coal from the Head of the Lakes is going into the Canadian Northwest every year. There is a point, however, where rates on dock coal equalize with all-rail coals from Illinois, Indiana and Kentucky, and below an imaginary line where that division occurs, competition between dock coal and all-rail coal is always keen.

Preparation of the coals has developed in the West to such an extent that often the best preparation is the deciding point. The better grades of Illinois coals obtained a foothold in dock territory solely on their excellent preparation. Dock men at one time never thought of giving their soft coal any sizing or screening, but they finally had to come to it, and today all modern docks are equipped with expensive screening plants and are effecting a splendid preparation.

#### RAILROAD FACILITIES

No port has better railroad facilities for the distribution of the coal tonnage handled over the docks than Duluth. The vast amount of ore, grain and merchandise brought here to be transhipped by water insures a steady and abundant car supply. The grain fields of Minnesota, South Dakota, North Dakota and Montana practically empty their entire harvests into the Head of the Lakes elevators during September, October, November and December at a rate that taxes all the railroads having their terminus at the Twin Ports. This brings a stream of cars loaded with grain to Duluth-Superior and when emptied they are switched to the docks for loading with coal and within a day are back on their way to the interior.

The Northern Pacific, the Great Northern, the Soo and the Omaha have all greatly improved their terminal facilities and are as much interested in keeping transportation from becoming congested as the dock companies. Since the congestion several years ago, there has been no serious blockade or car shortage. There need not be any if the buyer will do his part in ordering supplies forward in the early summer. If, however, ordering by the country trade is delayed until late fall, the handling of the immense tonnage during the three months time becomes a physical impossibility.

*(To be Continued)*

### Wyoming Coal Production in 1912

The coal production of Wyoming in 1912, according to E. W. Parker, of the U. S. Geological Survey, amounted to 7,368,124 short tons valued at \$11,648,088, an increase of 623,260 short tons in quantity and \$1,139,225 in value over the figures for 1911. With the single exception of the year 1910, the output of 1912 was the largest in the history of the state. In 1910, however, conditions were abnormal, a shortage of fuel caused by a six months' strike among the coal miners in the central and southwestern states having caused an unusual demand upon the coal-producing districts of the Rocky Mountain states. The production in 1911, while less than that in 1910, showed a normal gain over 1909, and that of 1912 exhibited a normal increase over 1911.

The region supplied by Wyoming coal was blessed with bountiful crops in 1912 and the metallurgical and other industries were in a prosperous condition, which was reflected not only in the increase in production over 1911, but in an advance in the average price per ton from \$1.55 to \$1.58.

Coal mining in Wyoming gave employment to 8036 men for an average of 238 days in 1912, against 7924 men for an average of 230 days in 1911. The labor efficiency in Wyoming is among the highest in the country,

usually showing an average production per man per year of over 900 tons. In 1912, this average was 917. According to the United States Bureau of Mines, there were 34 deaths by accident in the coal mines of Wyoming during 1912, an increase of one over 1911.

Probably more than half of the entire area of Wyoming is coal bearing. Coal is believed to exist in every county of the state, although in some portions it lies under so heavy a cover as to be unworkable under present conditions. The reserves are estimated at approximately 424 billion short tons, a supply exceeding that of any other state, with the possible exception of North Dakota.

The coals of North Dakota, however, are almost entirely lignite, with a small amount of sub-bituminous, whereas those of Wyoming range from sub-bituminous to medium-grade bituminous. Some of the Wyoming coals go to markets as far distant as the Pacific Coast.

The coalfields of Wyoming are numerous; some of them are large and contain many beds, some of which are very thick. One bed in the southwestern part of the state is about 90 ft. in thickness; the largest coalfield is the Powder River field in the northeastern part of the state. At least 11,000 of the 15,000 sq.m. contained in this area are underlain by coal beds of known workable thickness.

### OUTCROPPINGS

Most great edifices are supported by stones hidden in the ground.

❖

Nothing astonishes men so much as common sense and plain dealing.

❖

A newspaper in a Mississippi valley town recently printed the following concerning a possible coal development in that vicinity:

About 19 years ago, Mr. ——— was digging a well on his farm when he struck the coal vein at a depth of about 40 ft. He at once had competent chemists examine the coal, and they stated that it would take about 20 years from that time for the coal to be in condition to mine profitably, as it was then in the process of making a paying vein.

Mr. ——— is now an old man, and he says that he has waited 19 years and believes that it is time for him to again investigate the matter, etc.

As authorities agree that it has taken many thousands of years to form our present coal measures the "competent chemists" above mentioned must have been highly desirous of allowing Mother Nature to put the last finishing touches upon that particular deposit.

❖

It is not exactly good taste for a paper to blow its own horn. If a journal is accomplishing something, others will soon find it out, and the good deeds will forthwith be heralded broadcast. However, the following letter from J. W. Bischoff of the Davis Colliery Co., in West Virginia may carry a suggestion to other mine managers and superintendents in various fields:

Am inclosing you copy of letter sent from this office. We have, for some time, been greatly interested and pleased with the sentiments expressed in your forewords along the line indicated in that of June 21.

Believe that too little attention has been paid to the "Human Element" by those having to deal with it. We ourselves have made a study of this and have tried to impress our ideas in our own weak way upon our associates, and feel encouraged that such a medium as "Coal Age" has seen fit to take the matter up.

We are sure you are doing mining interests an almost inestimable favor by treating these subjects in the way you do.

The above is only one of numerous letters received by "Coal Age," and all going to prove that coal men are as human as any other class of individuals in any other industry. The pages in "Coal Age" devoted to the "human side" of mining have proved a great success, and if we are to believe our friends, this class of literature has been both interesting and beneficial.

## A Plumb-Line Target

As a rule, suggestions from engineers in other branches, on methods in underground surveying, are usually something old to the colliery engineer, or embody some unpractical refinement that will not stand the test of hard, practical usage. However, the *Engineering News* has come forward with a simple device, which should be of value in underground work. It is described as follows:



The accompanying illustration is self-explanatory. The target is made of white celluloid. It is of convenient size to carry in the pocket and is readily attached or detached to the plumb-bob line by slots shown in the illustration. It is claimed to be most appreciated when sighting in dark or shady places, or toward dusk when the light is failing. In such cases a match held behind the cut in the target will enable the transitman to quickly locate the plumb line. It is also claimed to be particularly serviceable where the background is dark as is the case of grass or foliage. The only possible objection we can see to its use is the resistance it would offer in a breeze and hence make it more difficult to center the bob. This device is called the "Fulton" pocket target and is made and sold by Kolesch & Co., 138 Fulton St., New York City. The price is 35c. each, or \$3.50 per dozen.

## Mine Inspection in Arkansas

Following are copies of letters, recently sent out, by Mine Inspector Thomas H. Shaw, to the mine owners and operators, and to members of the U. M. W. A., in Arkansas, in an earnest endeavor to secure their coöperation for the betterment of mining conditions in the state:

### TO MINE OWNERS AND OPERATORS

Gentlemen: I am anxious to bring about an improvement of coal mining in this state; I feel both miner and operator will coöperate with me, and realize that my intentions are to bring about safer conditions under which coal will be mined. I therefore respectfully call your attention to the following conditions which I find to be the most common causes of danger.

**Ventilation**—Under Acts 1905, Act No. 225, you are required to furnish 200 cubic feet of air to the working face. (Our Supreme Court has passed on this question in the 75 Arkansas, p. 76.) To comply with this, you will have to figure the amount of air consumed by various sources; for instance, it is estimated each mule will consume 500 cubic feet. Figure your air supply accordingly. Air must be conducted to the working face.

**Entries, Air Courses and Crosscuts**—Article 7, Act 225 reads as follows: "Two entries, parallel with each other, must be driven for the ingress and egress of the air, and crosscuts must be made at intervals not to exceed 40 ft. apart. Where gas exists, they shall be driven 30 ft. apart, or a crosscut be made at any other place ordered by the management to do so. No room shall be turned inside the last crosscut."

**Refuge Holes and Dusty Entries**—Section 5534 of Kirby's Digest requires refuge holes to be made not more than 30 ft. apart. Dusty entries must be cleaned up and sprinkled.

**Escapement Shaft**—Must be kept in good repair and steps rigged with banisters.

**Duty of Miners**—Miners must make entries, air crosses, and crosscuts not less than 7 ft. wide. And must burn pure lard oil in lamps. I hope to have your hearty coöperation in

bringing about a betterment of mining conditions in this state. I do not wish to work hardships on operator or miner, but must insist on the mining laws being lived up to. Trusting that these suggestions will meet with your approval and prompt compliance, I am,

Very truly,

TOM SHAW,

State Mine Inspector.

### TO MEMBERS OF THE U. M. W. A.

Gentlemen: I am trying very hard to place the working of mines on a safer basis, and in order to do this I must have the hearty coöperation of all the miners in the state. It is impossible to bring about the improvements that are necessary in the mines unless the miners do their part, and you cannot expect the mine owners to live up to the laws unless you, also, live up to the laws.

The principles of the U. M. W. A. are and always have been for justice and a square deal. I mean to see that every miner has a square deal from the operator, but in turn it is only fair, that the operator is given a square deal from the miner. And if you expect a strict compliance of the mining laws from the operator, it is necessary for you to also comply with these laws. The law makes several requirements of the miners. The following rules and regulations I wish to call to your specific attention, and would like to have your local take it up and discuss it with a view of seeing that the following rules are strictly complied with.

All drill dust must be moved from the vicinity before shots are fired. All entries, air courses, and crosscuts must be made not less than 7 ft. wide. They must be kept clean and cleared from dirt. All miners must burn pure lard oil in lamps. See that shotfired fire no shots where dust has been left, and that all dusty entries are left until they are cleaned and sprinkled. Also, see that no shot is fired that is considered dangerous.

I will appreciate information at any time of the violation of any of the mining laws, either by the operator or individual. I trust, in this effort to bring about safety in mining, that I will have the active coöperation of every miner and every local within the State of Arkansas.

Very truly,

TOM SHAW,

State Mine Inspector.

## Coal in Southern Manchuria

According to the Daily Consular and Trade Reports, the exportation of coal from Newchwang only began to appear in the Customs returns in 1907, and has grown steadily, reaching 193,125 tons in 1912. The supply comes mainly from Fushun near Mukden, but also from Penhsihu on the Mukden-Antung Ry., and from Yent'ai, near Liaoyang. In another direction, northwest of Chinchow, good coal is found at two places, named Peipao and Hsinch'iu, and it has been partly in the hope of providing an outlet for these mines that the harbor works at Hulutao have been commenced, and the railway from Chinchow toward Aigun projected.

## COMING SOCIETY MEETINGS

**First Aid Meet., Philadelphia & Reading Coal & Iron Co.**—The annual meeting of this company will be held at Lakeside Park, East Mahanoy Junction, Penn., Sept. 20.

**National Conservation Exposition**—Miners' Field Day, to be held under the auspices of the Tennessee Mine Foremen's Association, with the coöperation of the Bureau of Mines and the American Red Cross, on Sept. 20, at Knoxville, Tenn.

**American Mine Safety Association**—The second meeting of this society will be held at the Bureau of Mines, Pittsburgh, Sept. 22-24. H. M. Wilson is chairman.

**American Mining Congress**—This society meets for its 16th annual session at Philadelphia, Oct. 20-24; the secretary is J. F. Callbreath, who has opened quarters in the Land Title Building.

**Coal Mining Institute of America**—Winter Session meets Dec. 4 and 5 at the Fort Pitt Hotel, Pittsburgh, Penn. C. L. Fay, secretary, Wilkes-Barre, Penn.



## A New Coal-Hoisting System

In shaft mining it seems to be an all but universal practice to hoist the loaded car of coal out of the shaft before dumping. Furthermore, most cages are equipped to hoist only one car at a time. In many mines the amount of time thus lost in the transit of the cars up and down becomes a considerable quantity.

Mr. Andrew Flesher, of Taylorville, Ill., has devised a scheme which renders it unnecessary to move the car from the shaft bottom, and at the same time considerably increases the amount of coal which may be handled in a given length of time.

Briefly stated, this system consists of two automatic dumps at the shaft bottom discharging into hoppers which communicate, by means of a suitable gate, to either compartment of the hoisting shaft. Instead of placing the ordinary cages upon the hoisting rope, large steel buckets of suitable size and shape are provided. These are so arranged that when lowered to the bottom of the shaft they automatically operate the gates of the coal hop-

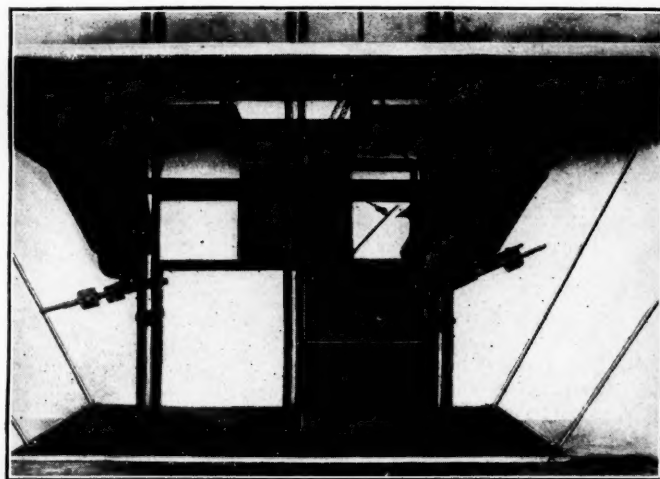


THESE CAGES HAVE A RECORD OF HOISTING 497 TONS IN ONE HOUR

pers above mentioned, one bucket, of course, operating the gate of the hopper upon one side of the shaft, and the other bucket operating that located upon the other side. The two buckets are arranged precisely as the ordinary cages, one traveling up, while the other moves downward, and while one is filling at its underground hopper, the other is discharging its load in the tippie in the ordinary manner.

These buckets may be made of any desirable size, but are usually constructed to carry from six to eight tons, thus having a considerably larger capacity than the ordinary mine car, while the time required for filling or discharge is reduced to a minimum.

It may readily be seen from the foregoing that a mine properly equipped with a pair of these buckets for hoisting will have a capacity equal to the same mine equipped with double or triple-deck cages. Furthermore, that when the buckets are employed hoists can be made with greater rapidity, as no time is lost in either caging



A CAGE AT SHAFT BOTTOM, SHOWING OPERATION OF CHUTES

the cars or dumping them, and the output of the mine will be governed largely by the ability to keep the loading hopper supplied with coal. Furthermore, no time will be lost in raising or lowering cars, since, as quick as a car is dumped, it is immediately run back into the workings ready to be loaded again.

We understand that this system has received a practical test in operation at one of the mines in southern Illinois, and that a pair of buckets, together with a pair of hoppers suitable for operation with them, are on exhibition at the works of the Foundry & Machine Co., at Taylorville, Ill.

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## Covering the Blowoff Pipe

Every engineer knows how bothersome it is to protect blowoff pipes inside the boiler setting. I have found a new way to protect mine, says W. E. Chandler, in *Power* of Aug. 26, 1913. Instead of bothering with cast-iron sleeves which seldom fit, or brick covers that split and fall down, to say nothing of filling the space in the combustion chamber, I simply cover the blowoff pipe from the boiler to the wall with  $\frac{7}{8}$ -in. asbestos rope. I then make a plaster of equal parts of asbestos meal and fireclay and add one pint of fine salt to a 16-qt. pailfull of plaster, using just enough water to make a stiff mass. This is plastered over the rope with the hands and crowded in between the strands

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Dipping coal seams should usually be ventilated by the ascensional system of ventilation, that is, the intake or fresh air should be conducted as directly as possible to the lowest part of the workings; and then made to circulate through the working places, starting with the lowest levels and gradually passing up the pitch toward the mouth of the mine. By this method the return air, which is commonly warmer and lighter than the intake, will be always rising toward the mouth of the mine and will, at the same time, be carrying the gases away from the men, so that the possibility of forming a dangerous mixture is constantly less.

## POWER DEPARTMENT

### A Modern Compressor Plant

BY FRANK H. KNEELAND

*SYNOPSIS—Where the underground conditions preclude the employment of electricity, compressed air is the next best medium of power transmission. The plant here described is a representative of a good type of compressor installation.*

So strong has been the trend of practice toward the employment of electric transmission in the construction of mining power plants during the past few years, that the mention of such a plant immediately brings a vision of a collection of steam turbines or high-speed engines direct-connected to revolving-field generators of high voltage. Conditions, however, frequently alter cases, and present difficulties in the way of safety, which may render the employment of electricity underground, in the judgment of certain state mine inspectors at least, scarcely less than suicidal.

Under such circumstances, there appears to be no alternative, but to revert to the older and less efficient, albeit the safer method, of power transmission in gaseous mines, namely, compressed air. Such is the case at Marianna, Penn., and the type and quality of the machinery employed show well the possibilities of this mode of storing and transporting energy.

At this plant electricity is employed only upon the surface. All operations performed underground, requiring the use of power, are accomplished by means of compressed air, and as a consequence a compressor plant of large capacity is required.

The power plant as a whole consists of two parts, the boiler house and the power house proper. The latter building is approximately 50x111 ft. inside. It is a steel-frame structure inclosed in brick with steel roof trusses and a concrete slab roof reinforced with wire netting. The floor is of concrete, neatly grooved to represent tile.

Upon coming in at the main entrance of the building the first machine encountered is a 26x46-in. Mesta simple Corliss engine, direct-connected to a 500-kw., 300-volt Westinghouse direct-current generator, operating at 100 r.p.m. The flywheel of this machine is of large size, being approximately 20 ft. in diameter, with a rim of about 12x14 in. cross-section. This is the only generator upon the main floor of the building, and is operated to accommodate the day load, which consists of all tippie machinery (23 motors), all coke larries (3), the machine shop, chain car haul, the electric lights in the mine, and in the repair shop, and when necessary the street lights and those in the houses of the town.

The second machine is an Ingersoll-Rand cross-compound, two-stage air compressor, operating at 75 r.p.m. The steam end has a modified Corliss valve gear, and the compression is what is known as straight line. The high- and low-pressure steam cylinders are 24 and 36 in. in diameter, respectively, the air cylinders being 20 and 34 in. in diameter, while the stroke is 30 in. This machine compresses to 100 lb. pressure per square inch,

and has a plate-steel intercooler. The high- and low-pressure air-admission valves are mechanically operated, while the discharge valves are automatic in action.

The next machine is a Mesta low-pressure cross-compound Corliss straight-line, two-stage air compressor. The high- and low-pressure steam cylinders are 22 in. and 36 in. in diameter, respectively; the air cylinders are 20 in. and 34 in. in diameter, while the common stroke is 48 in. This machine operates at 75 r.p.m., and compresses to 100 lb. pressure. The air valves are similar to those of the machine above described, in that the inlet valves are mechanically operated, and the discharge valves are automatic. Both steam and air cylinders are, however, upon the same side of the shaft. Both of the above compressors have automatic air governors controlling the air pressure within a 2-lb. limit.

The next machine is a high-pressure duplex straight-line Corliss, three-stage air compressor. The steam cylinders are 29 in. in diameter, and the air cylinders are 21 in., 15 in. and 6¾ in. in diameter, while the stroke is 24 in. The machine operates at 75 r.p.m., and compresses to 1000 lb. pressure. The air cylinders are tandem triplex, six cylinders in all. There are two intercoolers and one aftercooler on each side of the machine. All air valves, both inlet and discharge, are automatic in action.

The next machine is a Mesta high-pressure, duplex, cross-compound, Corliss, four-stage air compressor, with eight air cylinders in all, four on each side. The high- and low-pressure steam cylinders are 22 in. and 34 in. in diameter, respectively. The air cylinders are 29 in., 16 in., 7½ in., and 5¼ in. in diameter, while the stroke is 36 in. This machine runs at 100 r.p.m., and compresses air to 1000 lb. It is supplied with automatic regulators governing the stages, the first compression being to 40 lb., the second to 125 lb., the third to 300 lb., and the fourth to 1000 lb.

#### A GOOD CRANE IS PROVIDED

This completes the equipment of the power units upon the main floor of the building. A Case Manufacturing Co. 20-ton hand-operated traveling crane spans the width of the building, and traverses its complete length. A tram track leads into the building a sufficient distance so that any material may be run in upon a car and picked up by this crane.

The main bearings of all machines are lubricated by a gravity oiling system, while the cylinders are supplied by forced-feed oil pumps. All main steam piping is carried beneath the floor, with suitable goosenecks connecting to the various machines.

The low-pressure air, or that at 100 lb. pressure, is employed to operate all coal-cutting machines and punchers, as well as all pumps underground. The high-pressure air, or that at 1000 lb. pressure, is employed in the underground haulage locomotives, of which there are 23 in use.

Not the least noticeable features of the plant are the polished brass pipe railings, placed wherever necessary,

and the tidy and handy wrench boards. A telephone booth is also conveniently located in the engine room.

The neat, clean, ship-shape appearance of this plant speaks vastly more for the efficiency and morale of the working force than could any number of power-house reports.

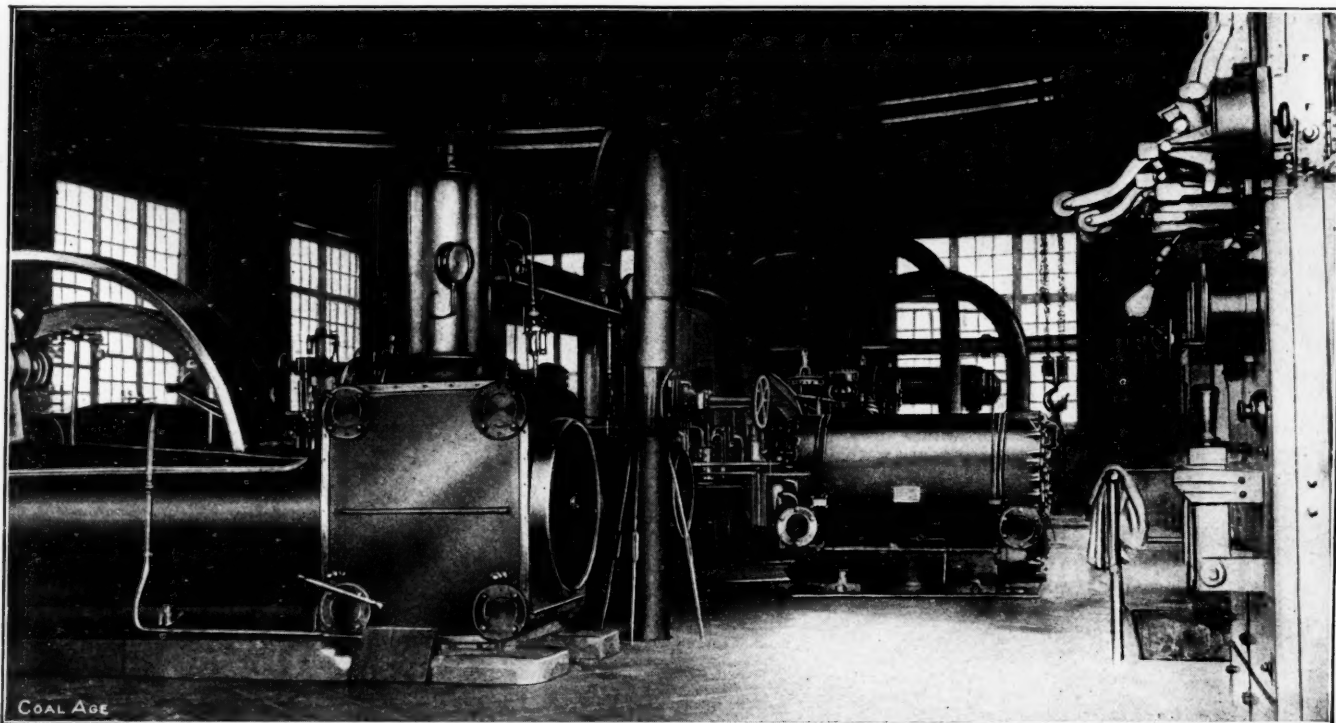
In the basement of the building is located a Russel tandem-compound engine direct-connected to a Westinghouse 100-kw., 300-volt, 400-amp. generator. The high- and low-pressure cylinders of this machine are 14 in. and 20 in. in diameter, respectively. The stroke is 20 in. and the speed is 275 r.p.m.

In the boiler house there are installed seven 500-hp. Stirling boilers, four of which are equipped for utilizing waste heat from the coke ovens. Three of these latter have Green chain-grate stokers, and the fourth is fur-

The firing alley in front of the boilers is unusually wide, being about 16 ft. across; 7 ft. is also allowed between boilers, all units being set singly. Two separate boiler-feed lines are installed, automatic feed-water regulators being supplied, together with high- and low-water alarms. The feed pumps are also equipped with pressure regulators.

#### HOW COAL AND ASHES ARE HANDLED

Coal is dumped into a bin outside the building, from which it is conveyed to the boiler house by a 20-in., 4-ply rubber-belt conveyor, driven by a 30-hp. motor. It is distributed to the boilers by a movable tripper. The ashes from the furnaces are wheeled and dumped into a car in a pit beneath the boiler-room floor. The car is run upon a track to a point outside the building, where it



INTERIOR OF POWER PLANT, SHOWING AIR COMPRESSORS, SWITCHBOARD AND TRAVELING CRANE

nished with a B. & W. chain grate. The other three boilers are fired by Jones underfeed stokers, with three retorts to each boiler. Coal for all boilers is supplied from an overhead steel bin, each boiler having its own compartment therein.

The boilers are fed by four 10x6x12-in. Epping-Carpenter duplex feed pumps. A 15x9x18-in. Yough pump forces all the water which has passed from the jackets and intercoolers of the compressors to a hotwell outside the building, back to the supply tanks above the power house, from which all water for the plant is taken. This pump may also be turned onto the boiler-feed line if necessary, and the boiler-feed pumps put on the hotwell.

Forced draft for the Jones stokers is furnished by a 9x3-ft. fan, direct-connected to Troy 8x8-in. vertical engines, operating at 300 r.p.m. These engines are in duplicate, placed upon either side of the fan and connected thereto by a flange coupling. The air supply is automatic, so that when the steam goes down the fan speeds up.

Steam is ordinarily carried at about 150 lb., the pop valves being set for 152 lb.

is elevated in a self-dumping cage and emptied into a concrete bin with a capacity of about 20 cars. From this bin the ashes are drawn into an electric larry, which conveys them to the ash pile.

All engines and compressors except the Mesta high-pressure compressor exhaust through two Lowell Manufacturing Co. open feed-water heaters of about 500 hp. each. The compressor above mentioned exhausts direct to the atmosphere.

In addition to supplying steam for the power house, the boilers also supply steam to hoisting engines of large size and capacity handling the cages in the mine shafts. The house supply and other pumps are also operated from them.

The Pittsburgh-Buffalo Co. justly prides itself upon the mine and the neat, clean, sanitary town of Marianna. There is perhaps no mining community in western Pennsylvania that is more often spoken of as model of excellence. The power plant above described is, however, in thorough keeping with its surroundings. It, too, should be the source of no little self-elation and satisfaction to the management.



## EDITORIALS

### Asepsis in the Mine

Some time ago we called attention editorially to the freedom from tetanus enjoyed by those who are injured in the mines. Today we desire to refer to the comparative immunity of such wounds from pus formation. We are aware that it will be said that care should always be taken to guard against infection, and in no other way can absolute safety be assured. This is indeed true, but the study of first aid is so large that it is important that stress be laid on the principal elements and not on those which are less important. Nevertheless aseptic treatment must be especially emphasized in cases when men are injured on the surface or in deep mines.

The "bacteria" which are parasites of men and other warm-blooded animals, are in their nature best adapted to blood temperatures. They do not thrive in the mine unless they remain with their host, for their microscopic bodies are not piped with heating systems like the bodies of vertebrate animals. Consequently their living conditions are not favorable where temperatures of 55 to 60 deg. are encountered, as in mines.

The pus-formers ("*pyogenes*") are usually infinitesimal seed-like bodies, which are known as "*micrococci*." That germ most numerous found in pus is a coccus which occurs in bunches like grapes, earning it the name of "*staphylococcus*," and these bunches are yellow, hence the expression "*aureus*," golden. The action of heat on that germ will be seen in the table, as also the effect on the "*streptococcus pyogenes*," which gains the initial part of its first name from its tendency to colonize in chains. There are other germs beside those which are given in the table, but they are of less importance; some are seed-like "*micrococci*" and some rod-like bacilli. It must be said that Sternberg's figures for the point at which rapid multiplication of micrococci occurs appear somewhat high, for Kruse and Pansini state of the *pneumococcus* and allied *streptococci* that: "Although, as a rule, no development occurs at 68 deg. F., certain varieties were obtained, which after long cultivation in artificial media, showed decided growth at 64 deg. F." All of which makes us wonder if the second column of the table gives sufficiently high figures where the micrococci have been reared in the human body and not in chicken-broth or agar-agar.

Name of germ	Multiplies most freely	Multiplies rapidly
1. <i>Staphylococcus pyogenes aureus</i> .....	86° to 99° F.	64° to 68° F.
2. <i>Streptococcus pyogenes</i> .....	86° to 99° F.	61° to 68° F.
3. <i>Pneumococcus</i> .....	95° to 99° F.	61° to 68° F.
4. <i>Micrococcus pneumoniae crouposae</i> .....	5° to 99° F.	72° to 75° F.

In all these organisms it is seen that rapid development demands a higher temperature than is usually found in an American mine. On leaving the human body by sweat, mucus or the breath, the germs become incapable of multiplication. Moreover, like most "bacteria," they are killed or their vitality is lessened by acids. The second germ in the table is alleged by Von Lingelsheim to be killed within two hours in a 0.4 per cent. solution

of sulphuric acid, and the fourth germ, while not destroyed in a saturated solution of ferric sulphate, is restrained from development in a 0.5 per cent. solution of that salt, is killed in a 0.5 per cent. solution of sulphuric acid and fails to develop in a solution one-fourth as strong.

We are prepared to admit that all "bacteria" passing directly from the mouth or carried by sweat to a wound doubtless have nearly the full germinative effect, so that breathing, spitting or placing a tobacco quid on a wound and picking over the exposed face of the injury with the finger nails are nefarious practices.

And we believe that rule 23 of the National Mine Safety Association is right in saying that "If no antiseptic or sterilized dressing is available, no dressing should be applied to the wound." All clothing removed from the body; all handkerchiefs, whether worn around the neck or secreted in the pocket, being warm, doubtless contain not only innumerable germs, but retain them in a condition in which they can immediately infect a wound.

But passing a sweatless hand over a dressing which will ultimately come against an open cut or tear will probably do no harm in the mine. The palm of the hand sweats but little and in the mine is usually dry and acid from contact with sulphates. A little ineptness, therefore, in opening a dressing or placing it, is not a cardinal sin.

In short, as we study the possibilities of infection, we are convinced that there are many gross sins against asepsis, but that only the most venial are committed at a first-aid meet. Will a contestant breathe on a wound? Will he use a tobacco quid? Will he use his handkerchief or his shirt sleeve as a dressing where better material is provided? It is almost unthinkable that he will do any of these things.

In fact, the first-aid meet has this defect, that it is like a drill, all pipeclay and polished shoes, and has as much resemblance to mine service as the parade ground has to the field of battle. What officer would list demerits for looting houses and stealing corn and chickens if he were making a schedule of demerits for a grand parade? Yet faults such as these are far more vital in war than breaking the line or performing any of the tricks of the awkward squad, for which demerits are provided.

As for the air-borne bacteria, Wainwright has shown us how they are removed. We have been shown how they are made listless and enervated by temperature conditions and acid. Do they get back all their vitality on re-entering a host? Possibly not, at least not at once. Like a snake when spring comes, they are only slowly revived by the genial heat. Tetanus is most severe in tropical climates where the germ never gets chilled and Malta fever has no terrors when transported to the inhospitable shores of Great Britain. As the virulence of "bacteria" is weakened by excessive heat, and by propagation through resistant hosts and unfavorable media, and as

it is said to be reduced by physical violence, perhaps also cold and acids have a similar benumbing effect, leaving the microbes helpless before the bactericidal action of the plasma of the blood.

That there is in this belief some degree of truth may be deduced from the fact that miners' wounds heal without difficulty while Fourth of July and summer injuries frequently have fatal results. Dr. F. L. McKee at the first, and so far the only, meeting of the American Mine Safety Association, declared that whenever miners had their wounds dressed at the hospital the failure to sterilize the wound in the mine had no evil results, a striking testimony to mining conditions which many another doctor could doubtless confirm. Dr. W. S. Roundtree declared that he "had seen only a few infections in two or three years in cases where the first-aid men got hold of the injured soon after the injury was received."

With this statement Dr. G. H. Halberstadt could not agree, saying that "in the anthracite region, the contrary is the case." It must be remembered that Dr. Halberstadt's experience is gained at some of the deepest mines in the country, where the heat is such that the *micrococci* are not materially numbed and some other inhibiting conditions may not be so marked in anthracite as in bituminous mines. In England, where mines are deep, doctors have testified that septicæmia has been due to injuries received from impact of coal.

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### Summer Boiler Complaints

The late summer or early fall is frequently a trying season to many colliery power-house men. This is particularly true if the feed-water supply is drawn from surface streams or stagnant pools. During this time of the year, lakes, creeks and rivers are usually low, and the heat hastens the decomposition of any animal or vegetable matter which the water may contain.

Many boiler-feed waters carry chemicals in solution which are alkaline in their reaction, and these, together with any compounds which may be fed to the boilers to prevent scaling, may, with organic oils from the decomposition above mentioned, form a soap, which is almost certain to cause foaming if it accumulates in sufficient quantities. Sewage also, even though present in but small quantities, may carry sufficient organic matter to cause decided foaming or priming.

On the other hand, decaying vegetable matter in ponds or marshes frequently results in the formation of organic acids, which may cause severe pitting or corrosion of the boiler plates. This, however, will not ordinarily occur if the surfaces are even slightly protected by scale.

Colliery boilers are frequently called upon for sudden and heavy deliveries of steam. This in itself is a difficult condition to meet. No boiler, under good steaming conditions, will deliver a dry product, the steam invariably containing small amounts of water in finely divided particles. Of course, passing the steam through a superheater after it has left the boiler proper, will evaporate this water held in suspension, and deliver a perfectly gaseous product to the steam header. Superheaters are, however, not often employed in mining power plants.

The amount of water carried over from the ordinary saturated steam boiler is seldom large enough to cause

damage. It is only when water leaves the boiler in masses commonly called "slugs," which are too large for eliminators or steam traps to handle, that there is danger of blowing an engine cylinder head out, which accident is always accompanied with more or less peril to the attendants.

The danger of priming through rapid ebullition, caused by a sudden demand upon the boiler, may be overcome by the installation of an auxiliary steam receiver, or dome, while that arising from organic oils in the feed water may be eliminated or at least materially lessened by installing an efficient coke or charcoal oil filter.

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### First-Aid Demerits

We publish today the rules governing the first-aid contest at Knoxville, Tenn. They confirm our idea that the American Mine Safety Association is a live and worthy institution, for, if indications point truly, it has cleaned off the old slate, and a new list of penalties is put in place of the old. No longer does failure to be aseptic appear as the worst sin in the first-aid calendar.

Ineffective artificial respiration and improper treatment each score an equal number of demerits, and only lack of neatness is considered so venial as to deserve the light fine of two discounts. Formerly you could let a man die from inefficient resuscitation methods and yet score 98 per cent. The criminal code of the association was certainly a fearful and wonderful thing.

We have added up the original schedule and the present, and find that there were 50 discounts in the old list whereas there are 95 in the new. It is easy to see how failure to be aseptic, which still counts for 10 demerits, has been made a less important offense by the new rulings.

We do not know that COAL AGE effected this reformation. Those two dozen physicians doubtless did not need the prodding of that mysterious physician who wrote the "First Aid Muddle," nor were the sequent editorial remarks necessary to awaken their sense of fitness. The surgeons on the committee on first-aid contests, we assume, made the changes as a result of their own careful deliberations, and we expect that they will make others before long, as indications point the need. Only narrow men refuse to rectify errors, and the Mine Safety Association appears to have shown that it is sufficiently broad-gaged to review its own acts.

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### Building Activity in Coal Fields

For more than a year anthracite and bituminous coal companies have been actively engaged in rebuilding old plants and developing new ones. The coal business has been rather an exception to the quiet conditions prevailing in American industrial circles. Coal prices were higher last year than in any normal year of the trade's history. The increase in value of the total output, at the mines, was nearly seventy million dollars. The past twelve months was the first time in years that many companies were able to earn interest on their bonds, and it is to the credit of the industry that those operators now able to see daylight are giving first thought to the betterment of their plants as regards safety and efficiency, rather than to the payment of long-awaited dividends.



## LEGAL DEPARTMENT

### Validity of Coal Trade-Names

By A. L. H. STREET\*

**SYNOPSIS**—*A name which describes the character of coal or the district in which it is produced, cannot be regarded as a private designation applicable only to the coal produced by the firm using that name. But if a coal is not mined in the district after which it is named, and if its quality is clearly inferior to that of the coal produced in that district, it is likely that the courts will decide that it is not entitled to that name, for a decision indicating this view of the courts has been rendered in a flour suit.*

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Several important court decisions show that the limits set by the law on the right to the exclusive use of a trade-name in the selling of coal are often not clearly understood. Below I give the general rules of law on this subject, with brief reference to decisions announced by appellate courts in cases which arose in the coal trade under those principles.

#### GENERIC NAMES CANNOT BE EXCLUSIVELY APPROPRIATED

Newly coined words or words which have had no previous significance in the trade may be monopolized as trade-names by the first person, firm or company that adopts them, but any name which is merely descriptive of the nature or quality of the commodity to which it is applied cannot be exclusively appropriated. Thus, the Kansas City Court of Appeals held in the case of McGrew Coal Company vs. Menefee, 144 Southwestern Reporter, 869, that since the word "Electric," as applied to bituminous coal, has a well understood meaning as signifying production by the use of electric-mining machinery, plaintiff did not acquire the right to monopolize the words "Electric Lump Coal" as a trade-name.

The court said: "The words do not denote the origin or ownership of the commodity to which they refer, but are merely descriptive of the quality of a commodity of general consumption." In other words, the law insists that a valid trade-name be limited to the purpose of designating a particular person, firm or company as the producer of the commodity to which it is applied, without giving the exclusive right to monopolize a generic name, to the use of which all producers of the same class of commodity are fairly entitled.

#### GEOGRAPHICAL NAMES CANNOT BECOME PERSONAL PROPERTY

As to geographical names, the United States Supreme Court has ruled: "The same reasons which forbid the exclusive appropriation of generic names, or of those merely descriptive of the article manufactured, and which can be employed with truth by other manufacturers, apply with equal force to the appropriation of geo-

graphical names, designating districts of country. Their nature is such that they cannot point to the origin (personal origin) or ownership of the articles of trade to which they may be applied. They point only at the place of production, not to the producer; and could they be appropriated exclusively, the appropriation would result in mischievous monopolies." Accordingly the court held that the right to use the name "Lackawanna" (a word which is said in Hollister's History of the Lackawanna Valley to be a corruption of the Indian words "Lahawhanna, signifying the meeting of two streams) was not subject to monopoly, though the coal of a particular producer had become well known by that name. (United States Supreme Court, Delaware & Hudson Canal Company vs. Clark, 13 Wall, 311.)

In a later case, Castner vs. Coffman, 20 Supreme Court Reporter, 842, the same court held that the name "Pocahontas Coal" was not subject to exclusive appropriation by selling agents for coal produced at or near a town named Pocahontas, especially as against the mine-owners for whom the agents had acted, even though the agents had enhanced the reputation of that field by careful inspection and grading of coal produced there. Following these decisions, the Supreme Court of Montana has held that the words "Owl Creek Coal" could not be monopolized to designate coal produced in a district known as the Owl Creek coal field, in which there was competitive mining. (Esselslyn vs. Holmes, 114 Pacific Reporter, 118.)

But a jobber who established an extensive trade in Nebraska for coal mined at Big Four, Colorado, where it was known as "Carbon Canon Coal," the jobber selling it under the name "Cristo Canon Coal" was held to be entitled to enjoin a former manager, who established a rival business, from using "Cristo Canon" as a trade name for the same class of fuel. (Nebraska Supreme Court, Consolidated Fuel Company vs. Brooks, 136 Northwestern Reporter, 60.)

#### EACH DISTRICT IS PROBABLY ENTITLED TO THE USE OF ITS OWN NAME

But although a geographical name is not subject to monopoly as a trade name, it is probably certain that the courts would grant the producers in any field, especially if it should happen to be celebrated, an injunction against the sale by competitors of coal produced in another field under a name implying that it was produced in the first mentioned field. This is particularly true if the coal of that field should be of a higher quality than the other. As authority for this statement, the writer refers to a decision of the United States Circuit Court of Appeals for the Seventh Circuit, in the case of Pillsbury-Washburn Flour Mills Company vs. Eagle, 86 Federal Reporter, 608, wherein it was decided that the Minneapolis flour millers were entitled to enjoin sale of flour produced elsewhere under brands which implied that it was manufactured in Minneapolis.

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## SOCIOLOGICAL DEPARTMENT

### Lehigh and Wilkes-Barre First-Aid Meet

Thirty-three first-aid teams from 14 collieries of the Lehigh & Wilkes-Barre Coal Co., by splendid demonstrations of first-aid work, made the fourth annual field day a big success. The contests were held at Sans Souci Park, near Wilkes-Barre, and several thousand people attended.

The outside team of the Nottingham colliery, Plymouth, carried off the big event, which was the last of the

One feature of the contest was the first-aid work of the boys' team from the Wanamie colliery. Six little fellows, none of whom are 16 years of age, make up this team and they gave a demonstration, which won much praise. They have been drilled for several months by William H. Craig, and the corps is as proficient in first-aid work as many of the older teams.

Following the contest, a banquet was served to the company officials and the first-aid teams. More than 600 men and boys gathered about the festive board. General Manager Charles F. Huber was toastmaster, and he



INSIDE TEAM OF LANCE OR NO. 11 COLLIERY OF LEHIGH AND WILKES-BARRE COAL CO., NEAR PLYMOUTH, PENN.  
(Left to right, Ray Lewis, captain, William Kirschner, Hugh O. Kane, Thomas Lewis and John Cummings with John Edwards as patient.)

day. The teams which won in the other events were pitted against each other in the final contest, two problems being submitted to them for solution. The teams entered in the final contest were all well matched and capable and the judges found it somewhat difficult to select a winner. After careful consideration of the work of each team, the honors were finally awarded the Nottingham corps and each member of that team was presented with a bronze medal. Their names follow: William James, captain, John Pritchard, James Colbert, William Berkhiser, Michael Rubie, Anthony Adzosi.

All the problems were such as any team in the anthracite field is apt to encounter frequently in actual practice. No effort was made to puzzle the first-aid men, but the problems caused them to think rapidly, as they would if facing real conditions. Dr. E. C. Wagner and Dr. J. W. Giest, both of Wilkes-Barre, were the judges. After each event they announced only the points scored by the winning team.

thanked the men for their interest in first-aid work and then called upon John H. Bigelow, district attorney of Luzerne County, to present pennants to the teams winning the first seven events and bronze medals to the Nottingham outside team for carrying off the chief event. Following the banquet, the men spent the rest of the day in pleasure at the park.

The events and winners follow:

Event No. 1—All corps of outside men compete on the following problem: Treat a compound fracture of the lower third of the left thigh, bleeding in spurts; also a laceration of the left ear and an injury to the right eye (Shock). Use roller bandage for dressing eye and ear. Event won by outside team of Buttonwood colliery. Score 100.

Event No. 2—All teams of inside men Wilkes-Barre and Ashley districts, compete on the following, problem: Treat a compound fracture of both bones of right leg, bleeding severely; also gas burns of both hands, right arm and shoulder and right side of face and ear (Shock). Use roller bandage for head dressing. Event won by inside team of Empire colliery. Score 100.

Event No. 3—All inside teams, Plymouth district and Honey Brook division, compete on the following problem.



Treat a compound fracture of the middle of the right thigh, severe bleeding; also severe burns of face, neck, right hand and forearm, complicated with a fracture of burned forearm (Shock.) Use roller bandages for dressing the burn and fractured forearm. Event won by inside team Parrish Colliery. Score 100.

Event No. 4—All outside and inside teams, Wilkes-Barre district, compete on the following problem: Dress a puncture wound of right side of abdomen (Shock); also a laceration over left knee, using triangular bandage for knee and about four turns 4-in. roller bandage for abdomen. Event won by outside team Stanton colliery. Score 100.

Event No. 5—All outside and inside teams, Ashley district, compete on the following: Dress a puncture wound of right chest between the fifth and sixth ribs (Shock); also a fractured left knee cap using triangular bandage for knee and about four turns 4-in. roller bandage for chest. Event won by inside team Sugar Notch colliery. Score 100.

Event No. 6—All outside and inside teams, Horey Brook division, compete on this problem: Treat a fracture of the left collar bone and a laceration of the top of the right foot, using a triangular bandage for the collar bone and a spica for the foot. Event won by outside team Audenreid colliery. Score 100.

Event No. 7—All outside and inside teams, Plymouth district, compete on this problem: Treat a compound fracture of both bones of the left forearm, bleeding in spurts; also lacerations of palm of right hand and fingers (Shock) using

**Stanton Colliery**—Outside team—W. H. Hetherby, captain, William Rainow, Thomas Harten, Anthony Monahan, John Minnick, John Flaherty.

No. 7 shaft—Edward Griffith, captain, George Irving, John L. Williams, Emmanuel Bennett, Fred Horlacher, Joseph Griswold.

No. 4 slope—Theophilus Richards, captain, Samuel Thomas, John X. Thomas, James Davis, Evan Morgan, Paul Butcher.

**Sugar Notch Colliery**—Outside team—Manus Kane, captain, Bert Shoemaker, Arthur Lewis, Alfred Williams, Anthony Swartz, William Carr.

Inside team—Thomas Roach, captain, Harry McDermott, Edward Roach, Benjamin Comstedt, Anthony Morris.

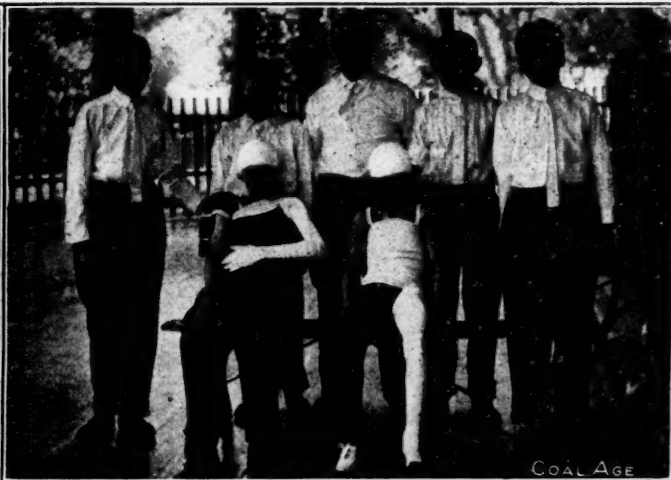
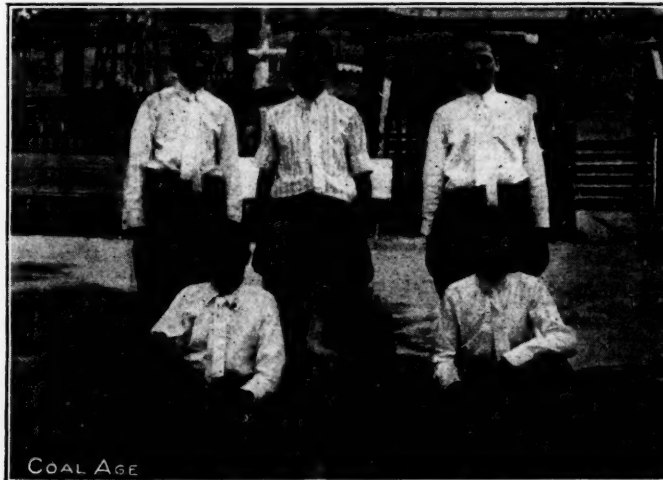
**Lance colliery**—Outside team—Roy Stark, captain, David Cummings, Charles Meyers, Charles Atwell, Walter Kostruza, Emlyn Williams.

Inside team—Ray Lewis, captain, John Cummings, Hugh Kane, James J. Lewis, Thomas Lewis, John D. Edwards.

**Nottingham Colliery**—Outside team—William James, captain, John Pritchard, James Colbert, William Berkeiser, Michael Rubie, Anthony Adozski.

Inside team—George Griffith, captain, John Matthews, Thomas Ashton, Isaac Thomas, William H. Jones, Martin Cusma.

**Reynolds Colliery**—Inside team—John Edwards, captain, H. James Edwards, Harry Miller, Patrick Driscoll, Ignatius Hosey, Stanley Socka.



BOYS' TEAM, WANAMIE COLLIERY, A MINE OF THE LEHIGH AND WILKES-BARRE COAL CO., NEAR NANTICOKE, PENN.

(Left to right, back row, John Craig, captain, Frank Stoj, Thomas Crouse; front row, Stanley Shershing, Walter Shershing and Forrest Rineheimer.)

a 2-in. roller bandage for dressing the forearm and the palm of the hand, and making gauntlet bandage for fingers. Event won by outside team of Nottingham Colliery. Score 100.

Event No. 8—The Boys team of the Wanamie colliery gave an exhibition, no points being scored.

Event No. 9—Winners of events from Numbers 1 to 7 inclusive compete on two problems. Problem No. 1—Treat a lacerated scalp wound on top of head, and a wound of the right groin using 2-in. recurrent bandage for the head and an ascending 3-in. spica for groin. Problem No. 2—Treat a fracture of spine or broken back. Event won by outside team of Nottingham colliery. Score 100.

The following teams participated, their membership being as follows:

**Hollenback Colliery**—Outside team—Arthur Hughes, captain, Andrew Letzko, Frank Hunsinger, Thomas Meighan, Michael A. Flaherty, Anthony Kennedy.

Inside team—William H. Evans, captain, David T. Davis, Edward Evans, Joseph Moyle, John Murray, John Hughes.

**Empire Colliery**—Inside team—Joseph Stevens, captain, Walter Powell, John Flanagan, Roy Lowe, John Moran, Daniel Ward.

**South Wilkes-Barre Colliery**—Outside team—M. J. Connolly, captain, Andrew Kratz, Harry Pollard, George Gould, Harry Reedy, William Austin.

No. 3 shaft—Ernest Seymour, captain, Watkin Williams, Harry Thompson, Hayden Evans, Evan Cann, David Williams.

No. 5 shaft—Richard Morgans, captain, James Evans, James P. Evans, Evan Phillips, James Morris, Daniel Rees.

(Left to right, back row, John Craig, captain, Stanley Shershing, William H. Craig, instructor, Frank Stoj, Thomas Crouse; front row, Forrest Rineheimer and Walter Shershing.)

**Wanamie Colliery**—Outside team—Irve Vandermark, captain, Charles Womelsdorf, A. L. Engler, Oscar Spaide, Theodore Womelsdorf, John E. Burke.

No. 2 slope—William Craig, captain; James Phillips, Frank Gizinski, Evan Edwards, William Hibbard, John O. Evans.

No. 3 slope—John Murphy, captain; E. C. Barrett, William Briggs, Thomas Murphy, William E. Roberts, William Marshall.

**Maxwell Colliery**—Outside team—Brian McGuire, captain, Westy Bierly, David Morgan, Nathan Kelly, Edmund Krogulski, Stanley Brown.

Baltimore shaft—Albert Stead, captain, Michael Gorham, John Lavin, Michael Cuff, Richard McElligott, Edward Cuff.

Red Ash shaft—Michael Cavanaugh, captain, Griff Hughes, Thomas Grady, Henry Williams, John R. Roberts, Benjamin Llewellyn.

**Buttonwood Colliery**—Outside team—David J. Williams, captain, Walter Griffith, Gottlieb Schwall, John Emmanuel, Harry Bryany, Edward Jacobs.

Inside team—John A. Thomas, captain, William W. Thomas, William J. Thomas, Howard Thomas, Rube Gliddon, David M. Jenkins.

**Parrish Colliery**—Harry Trebilcox, captain, John Ayres, Ernest Curnow, Benjamin Snyder, David Anthony, Hayden Jones.

Inside team—William J. Jones, captain, Alfred Reed, William Morris, Wade Maxwell, Edward Laughlin, David Jones.

**Audenreid Colliery**—Outside team—T. O. Mader, captain, Arthur Young, James Dougherty, James Roberts, Philip Lewis, Charles Gildea.

Inside team—John Hackett, captain, Thomas Jones, James McFadden, John Schwartz, Michael Billick, George Slodigo.

**Honey Brook Colliery**—Outside team—T. D. Muirhead, captain, William McCann, John Donlin, Neal Close, James Cull, George Mazurick.

No. 15 slope—John Liptock, captain, Emro Olyer, Barney Fogerty, William McFadden, John Upshaw, Edward Mears.

No. 20 slope—James McFadden captain, John Fogerty, William John Billick, Michael Pucher, Michael Servibeski.

Green Mount slope—Edward Fritz, captain, Steve Furish, William Kleckner, John Maticko, Hubbard Doud, Steve Lukus.

**Wanamie Boys Corps**—John Craig, captain, Thomas Stoker, Thomas Crouse, Frank Stoj, Walter Shershing, Forrest Rineheimer.

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## Revised First-Aid Contest Rules

The committee on rules, discounts and events of the Knoxville meet has prepared the following rules to govern the contest. These rules will doubtless be generally copied. They show evidences of careful formulation. As the regulations differ considerably from those of the American Mine Safety Association they are worthy of most careful consideration. It has not been announced whether they are rules formulated by the first-aid contest committee of that Association but it is reasonable to assume that they emanated from that body.

### RULES GOVERNING FIRST AID CONTEST

1. A team is composed of five men and a captain. Any one in the employ of a coal or metal company may be a member of a contesting team, providing he is not a physician or a trained nurse.
2. The captain will select the patient and designate the member or members of the team to perform the event.
3. The captain will control his team in their field work by giving audible commands.
4. The captain may select himself as one of the members who will perform the event.
5. The captain or other members will not prompt the person performing the event unless he is one of the performers. This will not apply to full team events.
6. At the conclusion of any event, the captain will raise his right hand and announce his team number. The team will remain at its post until relieved by the judges.
7. The teams will bring their own first-aid material, including bandages, splints, blankets, stretchers, etc., and will not be allowed to leave the patient to secure material.
8. The triangular bandage will be regarded as standard in the contest, but roller bandages may be used and those teams which use the latter will be given credits equal to those received by teams which use the triangle if the roller bandage is properly manipulated.
9. All splints must be prepared on the field for each event requiring their use. Specially designed splints may be used, but they must be assembled during the progress of the event in which they are to be used.
10. No practicing will be allowed on the field before the beginning of the contest.
11. The teams will be numbered consecutively, beginning at No. 1 and they will occupy their consecutive position on the field.
12. The judges will perform their work progressively, judging such number of teams in each event as the judges may determine and announce before the beginning of the contest.
13. In events involving resuscitation, the rescue of the patient and stretcher drill, the judges may require the teams to perform separately.
14. Each judge will mark the team number, event, and discount for each team judged, sign his name and deliver his record to the recorder.
15. The recorder will foot up the discounts and mark points made by each team in each event. The total points will be divided by the number of the events and the quotient will be the average for each team for the whole contest.
16. Time will not be an element unless the team or men performing run over the allotted time or fail to give treatment properly. All events shall commence and be finished at the sounding of a gong.
17. All exceptions to these rules must be made to the committee on rules, not later than ten (10) days prior to the day of the contest. The decision of the committee will be final.

18. The prizes will be listed by the committee of awards.

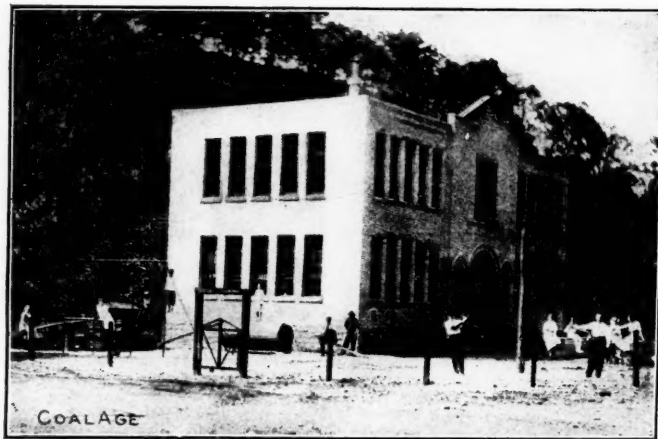
### DISCOUNTS FOR FIRST-AID CONTEST

- |   |    |
|---|----|
| 1. For not doing the most important thing first.  | 5  |
| 2. For captain's failure to command properly.   | 2  |
| 3. For slowness in work and lack of attention.  | 4  |
| 4. For failure to cover the wound entirely, or being unable to give location of injury. | 4  |
| 5. For ineffective artificial respiration.  | 10 |
| 6. For splint improperly padded or applied.   | 2  |
| 7. For tight, loose, or improperly applied bandage.                                     | 6  |
| 8. For insecure or granny knot.   | 5  |
| 9. For unclean first-aid material.  | 5  |
| 10. For failure to have on hand sufficient and proper material to complete a dressing.  | 5  |
| 11. For lack of neatness.   | 2  |
| 12. For awkward handling of patient.  | 5  |
| 13. For assistance lent by patient.   | 5  |
| 14. For tourniquet improperly applied.  | 5  |
| 15. For failure to stop bleeding.   | 5  |
| 16. For not treating shock.   | 5  |
| 17. For failure to be aseptic.  | 10 |
| 18. For improper treatment.   | 10 |

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## Playground at Mining Town

The Jamison Coal & Coke Company has three mines in the Pittsburgh bed near Farmington, Marion County, W. Va., along a branch of the Baltimore & Ohio R.R. between Fairmount, W. Va., and Moundsville, Ohio. At Jamison No. 9 of this company, is probably the first playground in the Fairmont region to be equipped with amusement appliances. The equipment has been supplied by the mining company.



THE PLAYGROUND OF THE SCHOOL AT JAMISON NO. 9, EQUIPPED BY THE JAMISON COAL & COKE CO.

To the extreme left will be seen a see-saw. Behind is an iron framework of three parts, one supporting a swing, and another, gymnasium rings on which in the picture a boy is standing and swinging. A third part of the framework serves as a horizontal bar. Near the school house is a roly-poly on which in the picture, a girl is balancing. In the front of the school is a giant's stride and a merry-go-round.

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## Auto-Truck for Rescue Work

The Bureau of Mines has added an automobile truck to its Pittsburgh, Penn., equipment. This will carry a small complement of men, oxygen helmets and rescue apparatus, and can be used within a radius of 100 miles from Pittsburgh. It will be able to reach points not easily accessible by railroad.



## The Marvel News

The *Marvel News* is a four-page newspaper issued by the Roden Coal Co. every two weeks. It measures 15¼x22 in. and is distributed free to the employees. The first issue was dated Apr. 26, 1913.

It is not, of course, as pretentious a publication as the *Employees' Magazine* of the Lehigh Valley Coal Co., but it is interesting to learn that its first issue predates that publication. About two columns are devoted to locals and personals. B. F. Roden, the president of the company utilizes another column to warn his employees against unprofitable and dangerous speculations. A prominent notice reads:

### MINERS' EARNINGS FOR MAY

13 miners earned over \$150, average.....	\$181
33 miners earned between \$100 and \$150, average.....	114
54 miners earned between \$75 and \$100, average.....	85
74 miners earned between \$50 and \$75, average.....	63
Average earnings of 174 miners.....	88

We are proud of this record and only wish all could be in the \$150 class. Which class are you in? Can't you get in a higher class for June?

These earnings are after deducting all labor and explosives. Can your friends at other mines make as good a showing?

The Fourth of July program follows with an account of the athletic exercises which were open to all who were or had been residents of Marvel. The Women's Department is written by E. B. Roden. The Church News occupies another column. Several cooking receipts are given by residents. The store advertises a two-days' inventory sale at cut prices with millinery at cost. The heart of the paper is filled with most interesting "boiler plate," with a story on the rear page. A few local firms advertise lumber, livery and insurance. A newspaper is a welcome innovation in a town as small as Marvel and the venture reflects much credit on the Roden Coal Co.

It may be said that the wages stated are what remains after all assistance, which some of the miners employ and all charges for powder are deducted. The average earnings are those of miners only and company men who are paid by the day were not included in the estimate. About 60 per cent. of the men are white and 40 per cent. colored. Comparatively few are foreigners.

The 74 men described as earning an average of \$63 worked less than 15 days in the month. The *daily* earnings of all the men are surprisingly close. The monthly difference is due to the fewer days some of the men worked. The average number of days worked by all the miners was only 17 days and as Mr. Roden declares, few professional men could make a living, working only 17 days per month.

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## Mining Accidents Studied in Public Schools

An effort is being made by J. H. Dague, educational secretary of the Y. M. C. A., and Sam Phillips, who formerly held the same position, but is now a state-mining inspector, to have the illustrated textbook "Mine Accidents and Their Prevention," which was published a year or two ago by the Delaware, Lackawanna & Western Railroad Co. Coal Department, slightly modified in text and adopted as a reader in the Scranton public schools. They are making the effort through the superintendent of schools, George W. Howell.

## State Help for Mine Schools

The appropriation, this month, of \$140,000 by the State of Pennsylvania for vocational training puts the rapidly growing mine schools in the anthracite region on a firmer basis than they have ever been before. Under an act passed May 1, 1913, this appropriation can be used to reimburse all vocational schools for two-thirds of their expenses of the previous year, up to a maximum of \$5000, provided that the State Board of Education has approved of their organization, control, location, equipment, courses of study, the qualifications of their teachers, the methods of instruction, the conditions of admission, the employment of pupils and the expenditures of money.

The schools at Nanticoke, where the Susquehanna Coal Co., the Delaware, Lackawanna & Western Railroad Co., and the Lehigh & Wilkes-Barre Coal Co., have operations, and at Shamokin, where the Lehigh Valley Coal Co., the Mineral Railroad & Mining Co., and the Philadelphia & Reading Coal & Iron Co. are operating, have been growing by leaps and bounds. The number of classes has more than quadrupled.

The third annual report of the Nanticoke district institute and classes shows a membership of 679 for the former and eight meetings with an average attendance of 199. The classes had only two dozen students in 1910, but increased to 657 in 1912. At the examination for mine foremen's and assistant mine foremen's certificates, held in Nanticoke last March, four members of this school passed the state examinations for the former, and 24 members passed the state examinations for the latter.

The third annual report of the Shamokin-Mt. Carmel district institute and classes shows a membership of 571 for the former and seven meetings, with an average attendance of 127. There were 450 men at the first banquet, at which Morris Williams, president of the Susquehanna Coal Co., presided and spoke. The classes had 25 students in 1910, 56 in 1911, and increased to 763 last year. At the examinations for mine foremen's and assistant mine foremen's certificates, held at Pottsville last March, members of this school secured two of the former and six of the latter.

The classes at both Nanticoke and Shamokin are held in the local school houses in the evenings from October to March each year. It is aimed to locate them as centrally as possible and to hold them three nights a week so that as great a percentage as possible of those enrolled can attend regularly. No trouble is anticipated in conforming to the state requirements, especially as it will lend its supervision next year, and it was the school boards in these districts who conducted these schools last year and fostered and gave the whole movement its present impetus.

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## Perseverance in Resuscitation

Joseph Mango, of St. Clair, was overcome with gas at Wadesville colliery, Aug. 27, and had been given up as dead, but members of the first-aid corps, after working for an hour, revived him. Mango was removed to his home very ill, but he will recover.

Although his body was cold and stiff, and his pulse had apparently ceased, the rescuers, George Phulright, Joseph Cook and William Webb, wrapped him in a blanket and forced oxygen into his lungs with a pulmotor.



## DISCUSSION BY READERS

### Mixed Lights in Mining

*Letter No. 14*—An opinion prevails, to a certain extent among miners and some mine officials, that the exclusive use of the safety lamp in a mine means that the ventilation can be neglected and gas allowed to accumulate and that miners can safely work in it with these lamps, which are supposed to insure safety and protection to the miner, in a gassy mine, under almost any condition. The safety lamp, when used with precaution and care, in a mine generating gas, is a means of safety many times to the miner; but if not so used, it is unwise and unsafe to work in gas, even with the safety lamp.

When it becomes necessary to put a mine on the exclusive use of safety lamps, that does not signify that the ventilation of that mine is to be neglected in the least. A mine worked altogether with safety lamps should be ventilated as efficiently as the one with open lights. A mine operated wholly with safety lamps should be ventilated to a degree that, after an inspection has been made, an open light could be taken to any portion of the working face with safety.

In my opinion, a dry and dusty mine, in which the formation of the seam changes frequently and the mine generates more or less gas, at times, and sudden outbursts of gas are known to occur, should be operated with safety lamps only. But a damp mine, generating gas in some sections only and free from any sudden outbursts, can be worked safely with mixed lights.

Suppose, for example, a certain mine gives off little gas in general, but a certain entry going sharply to the rise is generating gas, to some extent. Suppose this heading is advanced far enough from the last breakthrough for another connection and the air current is not ample to keep the face clear of gas at this distance. By means of a temporary brattice extended from the last breakthrough up the entry to a point near the face, the current is made to sweep the face and keep it free from gas so that open lights can be used. But if the brattice work is torn down by an overcharged shot, and, during the night, a considerable amount of gas has gathered in this heading, it would be advisable and safer to use safety lamps to replace the brattice, than to use open lights for that purpose, although open lights are being used in all other parts of the mine. Under conditions of the kind I have named, I deem it safe and advisable to use mixed lights in mining.

JOHN ROSE,  
District Mine Inspector.

Dayton, Tenn.

*Letter No. 15*—After reading the different opinions of so many practical men, in relation to the use of mixed lights in coal mines, I cannot understand why any mining company or mine superintendent should attempt to use open lights in one section of a mine and closed lights in another section, whether the mine be rated as a gaseous or a nongaseous mine.

If, at any time, a mine becomes in such a condition that it requires the introduction of safety lamps in a particular section while the use of open lights is allowed elsewhere in the mine there will always be the fear of some careless or reckless person, with an open light on his head, setting off some gas and causing a violent explosion; whereas, if safety lamps were used exclusively, this could not occur.

In my opinion, greater safety is assured by the use of safety lamps, in any coal mine whether generating gas or not; because there is always greater risk where open lights are in use. There have been numerous accidents caused by sparks falling from an open light into a can of powder and burning miners almost beyond recognition. Mines have also been set afire by sparks from lamps falling among oily waste.

Therefore, in my opinion, the company that uses mixed lights in coal mines, is employing a penny-wise and pound-foolish policy.

JOHN A. McDONALD, MGR.,  
Dominion No. 8.

Bridgeport, N. S., Canada.

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### Unsuspected Causes of Mine Explosions

During the past year, I have received several letters asking for my opinion as to the origin and cause of dust explosions. Having noticed the interest manifested in your columns, in reference to the investigation of what may be termed unsuspected causes of mine explosions, I decided that there was no better method of complying with the request of correspondents than by discussing the question of these possible causes in COAL AGE. Your editorial, Aug. 23, p. 273, commenting on the Brookside explosion of Aug. 2, draws attention again to the possible effect on the mine air, produced by the heat of compression due to numerous causes.

Some years ago, I made a microscopic examination of coal dust taken from the McAlester mines, in Indian Territory, now Oklahoma. This examination revealed many millions of molecular particles of a rhomboidal form, resembling minute balloons, each incased with a filmy substance that appeared like bitumen and which a chemical analysis proved to be a composition of bitumen and carbon. When this dust was placed in a beaker and treated with a 0.1 per cent. solution of sulphuric acid, a gas was given off, in copious quantity, that was hydrogeniferous. This gas, in combination with about seven parts of oxygen, formed a very explosive compound and burned in a Bunsen jet like an oxyhydrogen flame.

Further investigation led me to the conclusion that these fine particles of dust left undisturbed would, in time, decompose and become harmless, the escaping gas being diluted by the air sufficiently to render it nonexplosive. When disturbed, however, these molecular balloons were seemingly fractured, and the quantity of gas then given off rendered the air explosive. This would occur in mine workings as the result of a sudden concus-

sion, such as might be produced by a "windy shot" or heavy roof fall. The ignition of such an atmosphere would surely cause a terrific mine explosion.

To illustrate this condition in mining practice, let us suppose that a shotfirer has 14 shots to fire. Each successive shot disturbs more dust and fractures a certain percentage of the so called molecular balloons, until sufficient gas has been generated to cause an explosion when ignited by a following shot or by the shotfirer's open light. A careful analysis of the dust from the Cokedale mine, after the explosion, Feb. 9, 1911, compared with the results of the analysis of the dust taken from the McAlester mine, convinced me that there was every reason to believe that the hydrogeniferous gas produced from the coal dust, in both these mines, was the primary cause of explosion in each case.

If we accept this theory as a possible cause of mine explosions, the question arises what remedy can we suggest to prevent the same. In answer to this important question, I would state that: 1. A longer interval of time should be allowed between the firing of successive shots, to give the air current an opportunity to remove the gases generated by the last shot. This is especially important where dust is present. 2. Provide an ample well-split ventilating current and carefully watch its humidity. 3. Provide an efficient sprinkling or spraying system. In this connection, I would urge the use of a

solution of the following formula: One part sodium chloride in 100 parts of water, or a 1 per cent. solution of sodium chloride.

My reason for recommending this salt solution is that a long series of experiments have proved its efficiency. The affinity of the salt for water renders it capable of retaining moisture for a long period of time, under conditions that would otherwise produce the rapid evaporation of the water. It is well known that some salts are "hygroscopic," meaning that they absorb moisture from the air and from other substances. Other salts completely dissolve in the water they absorb, and these are termed "deliquescent." The use of these salts in sprinkling keeps the mine in a semimoist condition. Also, the chlorine of the sodium chloride has a tendency to attack the film of the molecular balloons and liberate the gas gradually, which is thus diluted and rendered harmless by the air. The use of this solution is equal, in effect, to 20 applications of water, which greatly reduces the number of sprinklings required. I, therefore, recommend it as being safer and more economical. I shall be glad to correspond further and answer any questions in the same connection, having devoted much time and study to the analysis of mine dust.

THOMAS H. EDWARDS,  
Mining Engineer.

Golden, Colo.

## Study Course in Coal Mining

BY J. T. BEARD

### The Coal Age Pocket Book

#### DIVISION

The operation of division is the reverse of that of multiplication. By this process, a number is divided into two or more equal parts; or it is found how many times one number called the "divisor" is contained in another number called the "dividend." The resultant number is called the "quotient."

The sign of division ( $\div$ ) written between two numbers signifies that the first is to be divided by the second. The operation is simply expressed by the formula

$$\text{Dividend} \div \text{divisor} = \text{quotient}$$

Or, by example,  
which is read: eight divided by two equals four.

The operation of division is often expressed by writing the dividend above the divisor, with a line between them, which expression is called a "fraction": thus,

$$\frac{\text{Dividend}}{\text{Divisor}} = \text{quotient} \quad \text{Or,} \quad \frac{8}{2} = 4$$

The operation is also frequently expressed by writing a diagonal line between the two numbers; thus  $8/2 = 4$ .

**Proof by Multiplication**—To prove that the work is correct, the operation is reversed and the divisor multiplied by the quotient. If the work is correct, the product will be equal to the dividend; thus

$$\text{Divisor} \times \text{quotient} = \text{dividend}$$

Or, by example,  
 $2 \times 4 = 8$

**Division of Larger Numbers**—When the dividend contains several figures and the divisor is a single figure only, the process known as "Short division" is employed. But if the divisor, also, contains several figures, a different process, known as "Long division," must be used.

**Short Division**—The process is best explained by an example. Let it be required to divide 7,814,508 by 2 and 3, respectively. Write the divisor on the left of the dividend and proceed to divide the figures of the dividend, separately, by the divisor, and write the quotient figure, each time, underneath the corresponding figure of the dividend. If, in any case, the division is not even, there being a remainder, this must be carried and prefixed as a tens figure to the next figure of the dividend, as illustrated in the following example, where the remainder to be carried is indicated by the small figures written above the figures of the dividend.

$$\begin{array}{r} 2 \overline{) 7,814,508} \\ \underline{3,907,254} \end{array}$$

$$\begin{array}{r} 3 \overline{) 7,814,508} \\ \underline{2,604,836} \end{array}$$

The several steps in these two examples are as follows:

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| (1) $7 \div 2 = 3$ , remainder 1; | (2) $7 \div 3 = 2$ , remainder 1; |
| $18 \div 2 = 9$ ;                 | $18 \div 3 = 6$ ;                 |
| $1 \div 2 = 0$ , remainder 1;     | $1 \div 3 = 0$ , remainder 1;     |
| $14 \div 2 = 7$ ;                 | $14 \div 3 = 4$ , remainder 2;    |
| $5 \div 2 = 2$ , remainder 1;     | $25 \div 3 = 8$ , remainder 1;    |
| $10 \div 2 = 5$ ;                 | $10 \div 3 = 3$ , remainder 1;    |
| $8 \div 2 = 4$ ;                  | $18 \div 3 = 6$ ;                 |

### The Coal Age Pocket Book

**Long Division**—The process here is similar to that of short division, except that there being two or more figures in the divisor, it is necessary to set down each several product, in turn, and subtract it from its corresponding period of the dividend to obtain the remainder which is prefixed to the next figure of the dividend, as shown below.

Divisor	Dividend	Quotient		
346	156747480	(453027		
1st prod.	1384		$346 \times 4 = 1384$	
1st rem.	1834		$1567 - 1384 = 183$	Proof
2d prod.	1730		$346 \times 5 = 1730$	453027
				346
2d rem.	1047		$1834 - 1730 = 104$	2718162
3d prod.	1038		$346 \times 3 = 1038$	1812108
				1359081
3d rem.	948		$1047 - 1038 = 9$	138
4th prod.	692		$346 \times 2 = 692$	Remainder
4th rem.	2560		$948 - 692 = 256$	
5th prod.	2422		$346 \times 7 = 2422$	156747480
				Dividend
Final remainder,	138		$2560 - 2422 = 138$	

In the above long division, the several products and remainders and each separate operation are indicated in small type. It is important to notice that the remainder before bringing down the next figure of the dividend is always smaller than the divisor; if not, increase that figure of the quotient and repeat the multiplication till a remainder is found that is less than the divisor.

If, after bringing down the next figure of the dividend, the number so increased is still less than the divisor, as in the case of the third remainder above, no division is possible; a cipher must be placed in the quotient and a second figure brought down and a third, if necessary, till the remainder so increased is greater than the divisor. For each figure of the dividend brought down a figure must be written in the quotient—a cipher whenever the increased remainder is too small for division. The number of figures in the quotient when the division is complete is always one greater than the number of figures brought down from the dividend.

**Incomplete Division**—It generally happens, as in the above example, after all the figures of the dividend have been brought down there is yet a remainder, which shows that the division is not a complete division. In other words, the divisor is not contained an exact number of times in the dividend; but there is a remainder too small for complete division.

This is best illustrated as follows: When 8 apples are divided among 4 boys each boy has 2 apples; thus  $8 \div 4 = 2$ . But if there were 9 apples and 4 boys, each boy would have 2 apples and there would be 1 apple left, which if divided equally would give each boy one-fourth; because there is 1 apple and 4 boys—only enough to give each boy a fraction, which is written  $\frac{1}{4}$ ; and this makes each boy's share  $2\frac{1}{4}$  apples.

Therefore, when the division is not complete write the last remainder over the divisor and annex to the quotient; thus,  $9 \div 4 = 2\frac{1}{4}$ .



## INQUIRIES OF GENERAL INTEREST

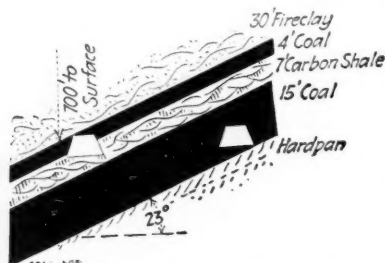
### Working Inclined Contiguous Seams

Kindly describe and illustrate the working of a section of two seams of coal at an average depth of 700 ft., vertical measurement, from the surface to the pavement of the lower seam. The strata are inclined at an angle of 23 deg. from the horizontal. The upper seam is 4 ft. thick, overlaid with a bed of fireclay 30 ft. in thickness. A carboniferous shale 7 ft. thick separates the two seams. The lower seam of coal is 15 ft. thick, with a moderately hard pavement or floor.

MINE FOREMAN.

Johnstown, Penn.

The relation of these seams and their associated strata is shown in the accompanying figure. Assuming that the surface conditions, with respect to the location of the property and facilities for transportation are favorable, if the coal outcrops on the property at a suitable point for the installation of the surface equipment and the shipment of coal, the mine should be opened by a slope driven on the double- or triple-entry system, according to the conditions to be encountered. These main-slope openings should be driven on the floor of the lower seam and the dimensions should be such as to provide amply for the expected tonnage and the proper ventilation of the mine workings in both seams.



WORKING CONTIGUOUS SEAMS  
BY CROSS-TUNNEL

If the seams do not outcrop on the company's property, a shaft should be sunk at a suitable point for the location of the surface equipment and affording suitable shipping facilities. This shaft should be located as far as practicable to the dip of the seam; but the location, in this respect, must be determined by giving due consideration to both the underground conditions of haulage and drainage, and the surface conditions previously mentioned.

From the foot of the shaft, the main-slope haulage roads and airways are driven to the rise, on the floor of the lower seam. If the coal is to be worked to the dip, this section should be developed in advance of the rise workings. Levels or gangways should be driven to the right and left of the main slope and airways. These levels should be driven on the double-entry system, approximately as shown in the figure. Chambers or chutes should be driven to the rise of these gangways, in each seam. The chambers in the thin overlying seam should be driven in advance, so that the pillars can be drawn back before the corresponding chambers in the lower seam are worked.

The chambers in the lower seam are driven up in the lower bench of coal, unless it is found advantageous to

work the entire thickness of the seam at once. It will generally prove more practicable to extract the upper bench of coal in the thick seam when drawing back the pillars. The lower levels should be worked out in advance of those above.

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### Mining under a Soft Roof

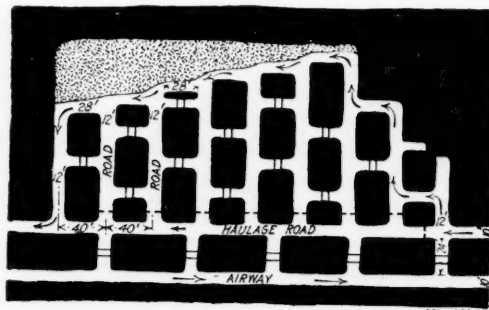
In the mine where I am employed, we are working a bituminous seam of coal 8 ft. thick and overlaid with a very soft top that gives much trouble; the bottom being also soft. It is necessary to take down 8 ft. of the top overlying the coal and haul it away, which makes the mining expensive. The coal lies 300 ft. below the surface. The rooms are driven on 55-ft. centers, with a slight pitch, about 2 per cent. Thus far we have been unable to devise any means of holding up the slate while taking out the coal. There is little water, the mine being well drained. I would be glad to receive any suggestions that would enable us to hold the roof so that the coal can be mined with safety.

JOSEPH HAHULA.

Southwest, Penn.

The difficulty in holding a weak top, especially when working a thick seam of soft coal, is due largely to driving too wide an opening. We would suggest that the rooms, in this case, should be driven up narrow, say not to exceed 12 ft. in width; and under this frail top, the rooms should not be driven further than, say from 40 to 50 yd., which practically determines the distance between the cross-entries. The width of the room pillars, for this depth and thickness of seam, should not be less than 21 ft., which will make the room centers 33 ft.

An even better plan than this would be to drive double rooms, as shown in the accompanying figure, making the openings or stalls 12 ft. wide and 40 ft. center to center.



PLAN OF DRIVING DOUBLE STALLS

This would leave 28-ft. pillars between the respective stalls and give each miner 14 ft. of pillar to draw back, two miners working on each road except the first. When the rooms have reached their limit, say 40 or 50 yd., the work of drawing back the pillars should be commenced, and care should be taken to keep the pillar work in line. All standing timber should be drawn as the work proceeds so as to allow the roof to fall and relieve the load on the pillars.



## EXAMINATION QUESTIONS

### Miscellaneous Questions

(Answered by Request)

*Ques.*—In post timbering in mines, what should be the ratio of the diameter to the length of the post, in order that it shall present an equal resistance to crushing and bending?

*Ans.*—For practically all kinds of mine timber in use, the ratio of the diameter to the length of the post, in order to fulfill these conditions, is 1:12, both dimensions being expressed in inches. This gives the simple rule: The diameter of the post in inches, measured at the small end, should not be less than the length of the post in feet.

*Ques.*—What are the advantages and disadvantages of drawing pillars uphill, on a pitch, say from 5 to 15 deg. or less? State fully.

*Ans.*—Assuming that the rooms have been driven to the dip and that the pillars are to be drawn back in a direction up the pitch, as the work progresses the weight of the roof rests more and more on the lower loose end of the pillar. While this has the advantage of assisting to break the coal from the pillar more easily, it has the disadvantage of crushing the pillar to a great extent, and the coal mined falls back into the waste where its recovery is dangerous and much of the coal is lost. The miner is also in greater danger from a sudden fall of roof or coal than when drawing pillars downhill. When drawing back pillars downhill the pillar gives greater support to the broken roof than when drawing uphill; although, in the former case, the miner must protect himself more carefully by setting timbers below the falls. Again, when drawing pillars uphill the water drains from the face of the pillar, but may accumulate in sufficient quantity as to require pumping, while the coal must be hauled up the pitch instead of sliding down a chute, as when drawing downhill.

This question may refer, however, to drawing a number of pillars starting from the basin and progressing uphill. In this case, the rooms are evidently driven on the strike of the seam, and there is a distinct advantage in drawing the lower pillars first, since the roof weight is better supported and the coal less crushed than when the work advances toward the basin. When drawing uphill, in this way, no pumping will be required; while, if the work progressed downhill, the accumulation of water at the dip would greatly impede the work on the pillars, at that point and require to be pumped.

*Ques.*—What kind and size of hoisting engine would you install to hoist 1200 tons of coal from a shaft 400 ft. deep, in eight hours, with a steam pressure of 70 lb. gage? The weight of coal in each car is 3000 lb. Allow 20 per cent. for resistance of engine, ropes and pulleys; also make allowance for the time lost in caging.

*Ans.*—The number of hoists per hour is

$$\frac{1200 \times 2000}{8 \times 3000} = 100 \text{ hoists}$$

In hoisting-engine practice, it is customary to allow a certain time for unavoidable delays, say five minutes per hour. The time per hoist is then

$$\frac{55 \times 60}{100} = 33 \text{ sec.}$$

Now, allowing, say 13 seconds as the time lost in starting and stopping each trip, and caging the coal, the actual net time of hoisting at a maximum speed, is  $33 - 13 = 20$  sec. per hoist; and the maximum speed of hoisting is then

$$\frac{400}{20} = 20 \text{ ft. per sec.}$$

Before the load on the engine can be determined, it is necessary to calculate the size of rope required to hoist the following load: Coal, 3000 lb.; and, say car, 1600 lb. and cage, 2400 lb.; total, 7000 lb.; and adding 10 per cent., for friction, gives for the total load on the rope, 7700 lb. The diameter of the rope to support this load, using a factor of safety  $f = 8$ , is then

$$d = \sqrt{\frac{fL}{34}} = \sqrt{\frac{8 \times 7700}{34 \times 2000}} = 0.94, \text{ say } 1 \text{ in.}$$

The weight of a 1-in. rope is 1.58 lb. per running foot; and the total weight of the rope hanging in the shaft is then  $400 \times 1.58 = \text{say } 640$  lb.

The unbalanced load hanging in the shaft is, now, as follows: Coal, 3000 lb.; rope, 640 lb.; total, 3640 lb.; and, allowing 20 per cent. for resistance of engines, rope and pulleys, as stated, the effective load or load hoisted, including frictional resistance, is  $3640 \div 0.80 = 4550$ , which is the load on the engine.

The required horsepower of the engine is then

$$H = \frac{4550 \times 20 \times 60}{33,000} = 165 + hp.$$

The engine to be used for this hoist should be a duplex, direct-connected engine, having a piston speed of 600 ft. per min., and an efficiency of, say 85 per cent. Assuming a slide-valve engine, cutting off at two-thirds stroke, the mean effective pressure (M.e.p.), in the cylinder, for a pressure of 70 lb. gage at the throttle, is

$$M.e.p. = 0.9 [0.917 (70 + 14.7) - 17] = 54.6 \text{ lb. per sq.in.}$$

Then, for an efficiency of  $f = 85$  per cent. and a mean effective pressure of  $p = 54.6$  lb. per sq.in., the diameter of the steam cylinder is

$$d = 205 \sqrt{\frac{H}{fpS}} = 205 \sqrt{\frac{165}{0.85 \times 54.6 \times 600}} = \text{say } 16 \text{ in.}$$

And, assuming a stroke of 18 in., the engine will make  $(600 \times 12) \div (2 \times 18) = 200$  r.p.m.

The size of duplex, direct-connected engine required in this case, assuming a double-compartment hoist, is, therefore, 16x18 in., running at a speed of 200 r.p.m. and developing 165 horsepower.

## COAL AND COKE NEWS

### Washington, D. C.

James E. Callbreath, secretary of the American Mining Congress, has issued the usual call and program for the forthcoming session of the congress to meet at Philadelphia Oct. 20 to 24. In the general description and discussion of the ground to be covered, Mr. Callbreath says that particular attention will be given to the question of coal mining and development and conservation of coal resources in general. He first points out some of the popular interpretations of the conservation idea as applied to coal mining and indicates the points at which these ideas are considered defective, by the public. Then he speaks of the proper interpretation of the conservation idea and says:

The best conservation of coal resources, i.e., the highest use and the least possible economic waste, is a matter of vital public concern, but of particular interest to every industrial center depending upon coal for power. This rests not alone upon the importance of the coal-mining business, but upon the magnitude of the industries to which coal is an absolute necessity.

Any increase in average production cost made necessary to conserve the more expensively mined coal reserves which is less than the transportation cost for a more distant supply, will find economic justification.

Every theory of coal conservation must consider the right of the coal operator to a fair profit, the miner to fair wages and the public to have its fuel at the lowest price consistent with good mining methods.

As a whole the coal-mining business is the most indispensable, the most unprofitable, the most maligned and misunderstood of all the mediums through which the welfare of the people is secured. It is the most important and the most helpless, having in it the power to command and yet being a non-resistant mass, accepting with only feeble protest the criticisms of a misinformed public. The public looks to a cheapening of this essential product by destroying the productive machinery which now furnishes it the cheapest fuel in the world.

The consumer must understand that in the end he must pay the value of the coal in the ground, the wages of the miner, the expense of special safety appliances, and any additional cost of production occasioned by the public demand for conservation, which means the saving of more expensively mined coals, in addition to the regular costs of production and a reasonable profit to the operator.

The coal operators cannot ignore the question of profit if they would. The wiping out of present profits must result in the destruction of the productive machinery so engaged, which would entail an enormous increase of future costs.

These questions concern the laborer, the manufacturer, the investor, the mine operator and the general public, which depends upon local industrial activity. Leaders of thought representing the various phases involved, will discuss this subject.

Special study will also be given to the question of an interstate trade commission to be intrusted with the duty of making special studies of the coal-mining industry as well as other problems that have figured largely in mining discussion during the past year or so.

#### A Revised Resolution Is Introduced

Representative Murray, of Massachusetts, has prepared and introduced a revised form of his resolution relating to coal in which he calls upon the several executive departments for all data in their possession bearing on:

First. Capitalization, ownership and control of the Pennsylvania anthracite mines.

Second. Intercorporate relationship of the coal-mining, coal-handling and coal-selling companies and the companies transporting coal by water or rail, or both.

Third. Comparative freight rates on anthracite coal and on articles of similar bulk from the principal anthracite-shipping points to the principal seaports and interior cities.

Fourth. Comparative rates on bituminous coal for shipments under essentially the same conditions and for equal distances as in the third paragraph.

Fifth. Cost of mining, transporting, and selling anthracite coal: the information to be in such detail as to show the relative costs of the different companies.

Sixth. The total revenues, expenses and profits of the anthracite-mining companies since the year nineteen hundred.

Seventh. The total revenues, expenses, and profits of the anthracite-carrying railroads since the year nineteen hundred.

Eighth. Wholesale prices of anthracite coal at the mines and at the principal distributing points, and retail prices of coal in the principal cities since the year nineteen hundred.

#### HARRISBURG, PENN.

The appropriation of \$140,000 by the State of Pennsylvania for vocational schools, which give definite preparation for a definite occupation, puts the rapidly growing mining schools conducted under the auspices of the various coal companies

throughout Pennsylvania, on a firmer basis than they have ever been before.

Under Act. No. 92, approved May 1, 1913, this appropriation can be used to reimburse vocational schools, and reads as follows:

This Commonwealth, in order to aid in the maintenance of approved local and joint industrial . . . schools or departments, shall as provided in this act, pay annually from the treasury to school districts and unions of school districts, maintaining such schools or departments, an amount equal to two-thirds of the sum which has been expended during the previous school year by such a school district . . . for instruction in practical subjects and in such related technical and academic subjects as may be necessary to complete well-rounded courses of training: Provided, No one school district shall receive more than five thousand dollars in any one school year.

These schools will be under the supervision of the state Superintendent of Public Instruction, as to organization, control, location, equipment, courses of study, qualifications of teachers, methods of instruction, conditions of admission, expenditures of money, etc.

The mining schools have been growing by leaps and bounds and the number of classes has more than quadrupled in the last year. In placing new schools it is aimed to locate them centrally and hold them three nights a week so that as great a percentage as possible of those enrolled can attend regularly. No trouble is anticipated in conforming to the state's requirements, especially as it will lend its aid and supervision next year. It was the school boards of these mining districts who conducted these schools last year and fostered and gave the present impetus to the whole movement.

The good accomplished by the mining institutes and schools, together with the splendid efforts of the Y. M. C. A., the International School of Correspondence, the University of Pittsburgh, and several of the coal companies is shown by the number of pupils which are among those receiving state certificates for mine foreman, assistant mine foreman, fire boss, etc., which are now ready for distribution by the Department of Mines.

This appropriation is something new and is largely experimental. If there is an increase in vocational schools, the Legislature will doubtlessly be induced to increase the grant at its next session. It is a small beginning at meeting the modern demand for something more practical in the school system. The progress of the schools will be watched with much interest.

#### A Thorough Inspection Is Ordered

The Chief of the Department of Mines Hon. James E. Roderick, has ordered an investigation of all electrical equipment in the anthracite region and the Randolph Means Co., consulting engineers of Pittsburgh, has been designated by Mr. Roderick to make the inspections. This company has been doing similar work in the bituminous region of the state.

At present the work will be confined to inspection of equipment in the mines throughout the Lackawanna region, and will be extended as soon as possible until the whole anthracite field is thoroughly inspected.

It is the intention of the Department of Mines to institute a thorough examination and wherever the installations are not in keeping with the standard methods, recommendations will be made that will reduce the hazards from electricity to a small percentage. Electricity in the anthracite region is rapidly gaining in favor as a transmitting medium to the different mechanical operations around the collieries.

#### PENNSYLVANIA Anthracite

**Scranton**—Five properties at Park St. and Capouse Ave. were damaged by a mine cave recently, the fissures that wrecked the buildings extending to the middle of the thoroughfare.

**Wilkes-Barre**—The Delaware and Hudson Co. has made an offer to the Sacred Heart Church for a settlement on a basis of \$600 for damage done to the cemetery owned by the congregation, by mining operation of the company's Pine Ridge Colliery. Members of the congregation will probably insist on the damaged burying plot being repaired or in having the bodies re-interred from the worst affected graves.



**Hazleton**—Over 700 foremen and clerks of the Lehigh Valley Coal Co. from points between Pittston and Shamokin, on Saturday Aug. 23, held their annual outing at Hazle Park. The collieries of the company were closed to permit the men to attend the picnic.

#### Bituminous

**Sykesville**—The 200 men who went on strike at the mines of the Cascade Coal Co. about three weeks ago, returned to work Aug. 27. The strike was occasioned as a protest against poor working conditions, and the agreement effected was in the men's favor.

**DuBois**—C. P. Munch, who formerly leased the mines at Caylor, Armstrong County, then owned by the Great Lakes Coal Co., has been charged by the Union with having embezzled money which was deducted by him from the miner's pay on behalf of the United Mine Workers of America. He has entered bail before the Justice of the Peace for \$500. An endeavor is also being made by several miners to collect from him by civil action wages which are said to be still due them for labor performed.

**Bakerton**—Two new mines are soon to be opened in the northern end of Cambria County. The first opening will be on the White farm and some 3000 acres will be operated. New houses are to be erected by the Barnes-Tucker interests, which are the operators of the new mines, and in a short time a large mining town will rise near the operations. Electric haulage and other modern devices are to be installed, and the workings will be run on a thoroughly up-to-date plan. The Pennsylvania R.R. has a line near the field and will handle the output.

**Charleroi**—The first coal was run recently at the new plant of the Carnegie Coal Co. at this place. Two hundred men are now employed and it is expected that in a short time, this will be increased to 800. This is the first time the mine has been in operation for three years. The new operation contains about 1200 acres of coal, which was purchased for approximately \$1,500,000.

#### WEST VIRGINIA

**Charleston**—Since his return to Charleston from a short trip West, President Thomas Cairns, of District No. 17, United Mine Workers of America, has received many urgent letters requesting him to send organizers into the Fairmont and Norfolk & Western coalfields. This matter must, however, be taken up with the higher officers of the United Mine Workers before organizers can be sent.

Work on the opening of a new mine by the Virginia Coal Co. on the Coal Fork of Campbell's Creek, is progressing rapidly, and it is expected that coal will be taken from this mine within a few days.

**Williamson**—By decree of the Mingo Circuit Court and the Common Pleas Court of Hamilton County, Ohio, the receivers have been directed to sell at public outcry the assets of the James R. Shanklin Coal Co., whose principal office is in Cincinnati. The sale will be made at the company's works at Blocton.

#### ALABAMA

**Jasper**—C. B. Stalnaker and associates, of Jasper, Alabama, have acquired a tract of coal land on the Northern Alabama Ry., near Jasper, containing a 9-ft. bed of Big Seam coal, and are making arrangements to operate same at an early date.

#### KENTUCKY

**De Koven**—Fire caused by lightning recently destroyed the general company store of the Ohio Valley Mining Co., at De Koven, Ky., causing a loss of about \$20,000. The post-office was located in the building, and was also burned.

**Lexington**—Twenty-one mine foremen's certificates were recently granted by the Kentucky Mining Department, at Lexington, after the completion of the examinations held the last week in August, to ascertain the qualifications of the applicants. Of the certificates granted, six were first-class and the remainder second-class.

**Corbin**—A disastrous fire, at Corbin, located at the junction of the main line of the Louisville & Nashville with its Middlesboro branch, and about 100 miles north of Knoxville, Tenn., caused damage estimated at a quarter of a million dollars, destroying eight stores, two hotels and a dwelling. The town is one of the most active in the south-eastern Kentucky coal fields, being the seat of many operating companies, as well as an important railroad point.

#### OHIO

**Columbus**—The commission appointed by Governor Cox to investigate the conditions surrounding the payment for coal mined in Ohio, has examined a number of mining dis-

tricts of the state. Among the counties visited were: Jackson, Coshocton, Stark, Columbiana, Tuscarawas, Guernsey, Belmont, Jefferson, Muskingum and Perry.

The commission left Sept. 2 for a trip in the coal fields of Illinois, where it will collect information of use in this work. It has been decided not to investigate conditions in the mines of the Pomeroy Bend district, because of the fact that they are so similar to those prevailing in eastern Ohio.

John C. Davies, state mine inspector and a member of the commission, says it will probably be Dec. 1 before a final report is ready and it will require hard work to get it completed by that time. The report will be submitted to a special session of the Ohio General Assembly, to be called the coming winter.

**Maynard**—A fall of stone at the Purselove mine, near Maynard, caused it to be closed for several hours, Aug. 27. The fall occurred in an old entry and blocked the main road, over which the haulage motors operate. No one was near the place when the fall occurred, and no one was injured.

#### INDIANA

**Francisco**—While a deep water well was being driven on Judge O. M. Welborn's farm, two miles west of here, the drill, at a depth of 200 ft., passed through a 6½-ft. vein of excellent coal, indicating that the Francisco field is at least two miles wide.

**Petersburg**—The Vandalia Coal Co., of Indianapolis, now has options on 5000 acres of the best coal land in Pike County, the options covering a territory of seven square miles. In some places two or three veins exist, ranging from four to seven feet thick.

By hard work, 250 miners who were in the Littles mine, near Petersburg, Ind., were taken out when fire broke out at the mine recently. The fire started in the fan house, and was confined there by the efforts of 200 men while the miners in the workings were being removed. The united efforts of the miners and others subdued the blaze after a time, and the damage was repaired in three or four days after the fire.

**Washington**—Samuel Elswick has opened a new coal mine south of this city and is taking out coal of good quality. He has a vein 4½ ft. thick, and though employing only a small force of miners at the present time, he expects to have room for many more during the winter months.

#### ILLINOIS

**Ladd**—The mine of the Illinois Third Vein Coal Co., which has been closed down for about six weeks, undergoing some needed repairs, has recently resumed operations.

**Seatonville**—The No. 4 mine of the Spring Valley Coal Co., located at Seatonville, has suspended operations for a period of perhaps six weeks, for repairs preparatory to a good run during the fall and winter months.

**Springfield**—Mine A of the Citizens' Coal Co. will resume operations soon, as will also the mines of the Central Cooperative Coal Co., which have been closed down for the summer months. There seems to be a shortage of men in some parts of the state, but the mines generally are working a little better than formerly.

**Belleville**—The Boyd Coal & Coke Co., has applied to the Circuit court for an injunction to restrain the officers of the United Mine Workers from "aiding and abetting" a strike by paying benefits to striking miners. The company claims that by paying strike benefits the union officials are preventing the operation of the mine.

**Du Quoin**—The strike at the Majestic and Queen mines came to a climax recently, when Superintendent A. C. Eaton, of the mining company, shot and killed William Sisney, a member of the pit committee at the Majestic mine. It is understood that the men met and got into a controversy over the differences of the opposing factions. Following the shooting, both parties got together and the trouble has been settled.

**De Soto**—The mine of the Kuckemeier Coal Co. will likewise resume operations in the course of the next month, after the re-lining of the main shaft. A boulder moving in quicksand, and weighing seven tons, caused the shaft to cave in and this had to be blasted out.

#### ARKANSAS

**Fort Smith**—The controversy over the water situation at the Western Coal & Mining Co. property at Jenny Lind which has called forth much criticism is now at an end. The operators are repairing their wells and seeking a new water supply, and according to Judge Hester an amicable settlement has been reached satisfactory to all concerned.

## COLORADO

**Colorado Springs**—The organization work which is being carried out all over Colorado by the United Mine Workers of America has been extended to the coal mines in El Paso County. The miners here number only about 350 or 400 men, but about 100 have joined the local union.

**Denver**—Officials of the United Mine Workers of America on Aug. 25 issued a signed statement denying that the open shop would be considered as a basis of negotiation with the operating companies. This statement also affirms, however, the intention of the union officials to exhaust all honorable means to bring about a settlement before a strike order is issued.

## FOREIGN NEWS

**Vancouver, B. C.**—Public indignation over the forced importation of Japanese coal, as a result of the refusal of the operators to arbitrate the strikes in mines near here, is liable to effect, it is said, the opening of government mines in Alaska. The mine operators declare that they will import Japanese coal until the strikers return to work and the owners are being bitterly denounced as responsible for this situation.

## PERSONALS

J. F. A. Williams, of New Orleans, has been appointed sales manager of the West Kentucky Coal Co. with headquarters at Paducah succeeding W. E. Gage, who resigned several weeks ago.

Earl A. Henry, inspector of the 5th West Virginia mining district, has been appointed chief inspector of the state department of mines succeeding John Laing, resigned, effective Sept. 1. Mr. Henry has been a district inspector for 14 years.

Carrol A. Garner, who, for a number of years, was employed as an instructor in the mining department of the Pennsylvania State College, has resigned, and accepted a position with the Lehigh Valley Coal Co., as a mining engineer, in the Hazelton Division.

## CONSTRUCTION NEWS

**Pottsville, Penn.**—The Maderia Hill Coal Co., of Pottsville, expects to build a 3000-ton capacity breaker in the near future.

**St. David, Ill.**—The contractors who will do the construction work on the head frame of the No. 2 mine of the Big Creek Coal Co., which was destroyed by fire about three weeks ago are on the job and will begin work soon. It is estimated that 60 days will be required to place the mine in condition for operation.

**Kenova, W. Va.**—In order to connect up its proposed Beaver Creek branch line with its main line, whose nearest point is Kenova, W. Va., 100 miles distant, the Baltimore & Ohio R.R. is said to be planning a line from Kenova up the Big Sandy Rivier, which will give an outlet to the various large operations along Beaver Creek, as well as on the newly completed line at the mouth of Shelby Creek, 20 miles east of the Beaver Creek line.

**Pittsburgh, Penn.**—The purchase of the Belmont Central R.R. built a number of years ago to tap the Belmont County, Ohio, coalfields has revived talk of the construction of a connecting line between the Newark and Cleveland divisions of the Baltimore & Ohio. It was the latter line which recently purchased the Belmont Central. The road extends from Lafferty, Ohio, toward Morristown and if the connecting link is constructed will pass through the latter place connecting with the Newark division at Belmont.

**Morgantown, W. Va.**—The Polard Coke Co., which owns 1100 acres of coal along Dunkard Creek in Greene County, Penn., expects to begin work about Oct. 1, on 220 new ovens of the Mitchell type. Some ovens are at present in operation, and the entire plant of 250 ovens is to be in blast by July 1, 1914. A contract has also been awarded to the A. K. Jenkins Lumber Co., of Point Marion, for 30 new houses.

This company is the first to begin actual operation in the Greene County field made available to the coke and coal market by the extension of the Monongahela Railroad to the state line, where it connects with the Buckhannon & Northern Ry.

**Whitesburg, Ky.**—It is reported that the Lexington & Eastern will soon begin the construction of a branch line three miles in length up Potter's Fork, in order to reach the holdings of the Mineral Fuel Co. It is expected that the Mineral Fuel Co. will build a town at the end of this branch, plans having been prepared providing for the building of over a thousand houses, including dwellings, hotels, boarding houses, stores, churches and schools. The work of ballasting the entire upper end of the Lexington & Eastern is nearing completion, making the line a first-class one in every respect as far as Whitesburg.

**San Francisco, Calif.**—Capitalists on the Pacific coast are figuring on establishing a by-product coke plant at San Francisco, expecting to receive coal for this plant from the Atlantic sea board, the coal to be transported through the Panama Canal when same is opened to navigation. At present a great deal of coke is used on the Pacific coast, being received from Australia. A by-product coke plant at San Francisco would have a good market for all the by-products so that there would be no loss from any source. It is believed by many that such a plant receiving coal from Pennsylvania, West Virginia or Virginia would be a decidedly paying proposition.

**Johnstown, Penn.**—What is declared to be the final survey preparatory to the beginning of actual construction is now being made by a large corps of surveyors working in Somerset County under the direction of the Western Maryland R.R. The proposed road will leave the main line near Rockwood and go north through the Husband field to Jenners, tapping some of the richest coal land in Somerset County. The New York Central is gradually extending its coal branches down through Cambria and Indiana Counties, directly toward the northward extension of the Western Maryland. It is predicted that these two lines will meet in Johnstown, and will have no difficulty in making connections, thus tapping another heavy freight district. A line through here would give the New York Central another route into the rich West Virginia coal fields, which have been extensively investigated by the Vanderbilt interests of late.

## NEW INCORPORATIONS

**Memphis, Tenn.**—The Mercer Coal Co., of Mercer, Tenn., has been incorporated with a capital stock of \$50,000 to develop coal mines.

**St. Louis, Mo.**—The Briquette Coal Manufacturing Co., of St. Louis, has been authorized to sell its stock and engage in business. This concern is capitalized at \$160,000.

**Philadelphia, Penn.**—The Eastern Pennsylvania Coal Co., of Philadelphia, has filed notice with the Secretary of State of increase of stock from \$200,000 to \$7,500,000.

**New York, N. Y.**—The Alexander Coal & Coke Corporation has been incorporated with a capital stock of \$100,000 by W. H. Alexander, D. M. Stokes and A. Van Fosson.

**Pittsburgh, Penn.**—The Appalachian Coal & Timber Co. has been incorporated with a capital stock of \$50,000 by J. T. Manning, P. H. Reniers, M. J. Sebolt, all of Pittsburgh.

**Somerset, Penn.**—Application will be made Sept. 22 by Harry J. Filer, Frank P. Filer and Enoch W. Filer for the charter of an intended corporation to be called the Lake Trade Coal Mining Co.

**Plineville, Ky.**—The Looney Creek Coal Co. has filed articles of incorporation at Frankfort. The company will operate in Harlan County above Poor Fork, close to the workings of the Wisconsin Steel Co.

**Knoxville, Tenn.**—The Golden Ash Coal Co. has been incorporated in Knox County with a capital stock of \$40,000. The Southern Mining Co. has also been incorporated in Knox County with a capital stock of \$30,000.

**New York, N. Y.**—Rubel, Nager & Rubel have been incorporated in Brooklyn to deal in coal, coke, etc. The capital stock is \$100,000 and the incorporators are S. Nager, Jr., Rockville Center, S. A. Telsey and S. Rubel, of Brooklyn.

**St. Louis, Mo.**—The East Kentucky Coal & Coke Co. have filed articles of incorporation in St. Louis. The incorporators are S. R. Johnson, H. T. Ochterbeck, W. D. Condie and W. K. Spinney. The object of the firm is to buy, sell and mine



coal, coke, iron and other mineral products and the capital stock which is wholly paid is \$2000.

**Connellsville, Penn.**—The Pittsburgh Steam Coal Co. and the Stoner Coal Co. have consolidated under the name of the Connellsville Coal & Coke Co. The Pittsburgh Steam Coal Co. operated plants at Montana and Opekiska, W. Va., while the Stoner Co. had plants at Alverton in Westmoreland County, Penn.

**Charleston, W. Va.**—The Barton Coal Mining Co. has been incorporated at Philadelphia to mine, manufacture and deal in coal, coke, lumber and other commodities and products. The authorized capital is \$25,000 and the incorporators are Walter S. Simms, of Philadelphia, W. F. Jacoby, Morristown, Penn., J. Leon De Hart, of Philadelphia, and others.

**Toledo, Ohio**—The S. C. Schenck Co. has been organized in Toledo with Dan Schenck, well known in coal circles, at the head of the new concern. The new company was incorporated under the laws of Ohio with a capital stock of \$200,000, and will take over the business formerly conducted by S. C. Schenck, deceased, and will retain its former headquarters on Superior St. The Chicago office will also be maintained. The officers are: President, D. D. Schenck; vice-president, H. E. Schenck; secretary and treasurer, L. R. Schenck. C. L. Dering has been appointed manager of the Chicago branch.

## INDUSTRIAL NEWS

**San Francisco, Calif.**—The Goldschmidt Thermit Co. has moved its office from 432-436 Folsom St., to 329-333 Folsom St., San Francisco.

**Pottsville, Penn.**—The Wolf Creek Coal Co., of Hazleton is considering shipping all of its product to the colliery at New Boston, and its preparation for market at that place.

**Gebo, Wyo.**—The Owl Creek Coal Co. has recently purchased from the Kerr Turbine Co., Wellsville, N. Y., a 200-kw. direct-current Economy turbo-generator for installation at Gebo.

**Manila, P. I.**—The Norwegian steamer "Titania" has been taken under time charter for a period of four years, and is to ply between Japanese ports and the Philippines with coal.

**Seabee, Ky.**—It is reported that a syndicate has acquired coal rights in the western end of Webster County, covering about 40,000 acres, at prices averaging approximately \$10 an acre.

**Portland, Ore.**—On completing her forthcoming voyage to China from Portland, with a lumber cargo, the Norwegian tramp "Thor," Captain Kroger, will load back for the Coast and then go into the coal trade between British Columbia, San Francisco and Portland.

**Moundsville, W. Va.**—The Ben Franklin Coal Co., of West Virginia, is installing a Christie box car loader at its Panama mine. The siding tracks are also being raised about 8 ft. These improvements are being made because of an increase in the number of orders.

**Portland, Ore.**—The British steamer "Harlow" is now in Portland Harbor to load. She brought over from Rotterdam to San Francisco the largest coal cargo on record on the Pacific Coast. The cargo was 9554 tons, and was for San Francisco coal dealers.

**Provo, Utah**—The Spring Cañon Coal Co. will place in operation in its mines at Helper, Utah, 6-ton and 15-ton, 40-in. gage electric mining locomotives, and will install in its power plant a switchboard, all the apparatus having been ordered from the General Electric Co.

**Pottsville, Penn.**—The prolonged drouth in this region has caused the collieries and washeries to run short of water, and many mines must soon close unless heavy rains come. Some collieries are using the strong sulphur water from the mines for steam purposes, although it is extremely injurious to the boilers.

**Parsons, Kan.**—A fire which started in 31,000 tons of coal stored in the yards of the Missouri, Kansas & Texas Railway Co. six weeks ago is still burning. It is estimated that the company has lost 6000 tons of coal since the fire started. The gas and fumes from the burning coal makes it almost impossible for a person to live in that part of town.

**Whitesburg, Ky.**—It is reported that John Litts and associates, of Wise County, Va., are closing deals on a boundary of between 15,000 and 18,000 acres of rich coal and timber land lying along Rockhouse Creek and Carr's Fork, west of Whitesburg, along the borders of Letcher and Knott Counties.

**Birmingham, Ala.**—The American Concentrator Co., of Joplin, Mo., have effected an arrangement with the Roberts & Schaefer Co., whereby the latter company is to design and build the new coal-washing plant for the Tennessee Coal, Iron & R.R. Co., at Birmingham, Ala., for which the American Concentrator Co. recently contracted, and in which plant their "Elmore" coal jigs will be used.

**Somerset, Penn.**—A deal involving the transfer of 215 acres of the surface and mineral rights of the Geo. B. Mangus farm near the new mining town of Cairnbrook was closed Aug. 26 by M. L. Reiman, of Johnstown who held an option on the property, making the transfer to John Lochrie, of Windber for a consideration, that was in the neighborhood of \$30,000. It is the intention of Mr. Lochrie to develop the mineral.

**Connellsville, Penn.**—The probability that the constitutionality of the recent act placing a tax of 2½ per cent. on the value of anthracite coal at the mines will be tested is indicated by the action of some of the companies in segregating this tax and keeping a complete record of the persons from whom it is received, so that should the act be declared unconstitutional there will be little trouble in making the proper refund.

**Philadelphia, Penn.**—The Pennsylvania R.R. is soon to install a wireless telephone system on the trains of that road for the use of the engineers and conductors. It is said that this new scheme will do much toward the prevention of accidents. Preliminary tests have already been completed over the Huntington and Broad Top line and the freight and coal trains of the road are now being equipped with the new wireless system.

**Canonsburg, Penn.**—The Joseph Cowden heirs have sold their farm of 240 acres near Bishop in Cecil township to people representing the Montour Railroad Co. for \$250 an acre. The tract of land contains 240 acres, so that the total sum involved in the deal was \$60,000. As the farm was badly cut up by the new railroad, the owners refused to consider the amount offered by the company for right of way and insisted on selling outright.

**Pittsburgh, Penn.**—The freight traffic on the New York Central lines through northern Cambria and Clearfield counties is increasing rapidly, and some big improvements are being contemplated by officials of the road. The coal companies operating along the Cairnbrook-Windber branch are storing train loads of coal to be shipped as soon as the branch is in operation, and it is feared that there will be a freight rush when this line is finished.

**Harrisburg, Penn.**—The United Mine Workers are determined to force the question of eliminating electric motors from anthracite mines, which are considered dangerous by reason of the presence of gas. Several accidents happening recently have brought attention to the fact that a spark from a motor has set off the gas. Acting upon instruction from the subdistrict convention, held by the union recently, the officials have presented the facts to the Department of Mines and will insist that the danger be eliminated.

**Duluth, Minn.**—Hard coal shipments from the head of the lake for the month of August will not equal the coal tonnage of August a year ago by approximately 20 per cent. There appears to be no diminution in the demand for coal, but at the present time there is no certain shortage, and hence no apparent hurry for customers to order their coal. Coal is moving from the dock slowly, and this fact has determined the amount that is coming up the lakes. Railroad men do not anticipate a heavy movement from the docks until later in the Fall.

**Waynesburg, Penn.**—One of the largest deals in coal acreage in Greene County has been practically closed between J. V. Thompson of Uniontown, and the Youngstown Sheet & Tube Co. Over 5000 acres of the finest coking coal lands situated in Cumberland and Monongahela township are involved in this deal, and the consideration named is nearly \$5,000,000, or an average of about \$1000 an acre. In addition to the coal rights the surface land is included, and it is expected that mining and coking operations are to be opened on a large scale shortly. Several hundred ovens will be erected and several shafts sunk.

**Philadelphia, Penn.**—Another attempt to smash the anthracite coal trust was begun Sept. 2, when the Government filed a civil suit under the Sherman law. The Reading system, the railroad, coal producing and subsidiary rail and coal corporations was attacked.

That the system owns 75 per cent. and transports 50 per cent. of all the anthracite coal in Pennsylvania was alleged by the Government. The bill declares unless the present combination is smashed the Reading will in time "control every ton of commercially valuable anthracite known to exist."

## COAL TRADE REVIEWS

### GENERAL REVIEW

**Full winter circular on hard coal now in effect and business temporarily restricted. High prices on bituminous diverting some demand to the anthracite steam grades. Seasonal business in soft coal far ahead of any previous record. Demand continues as strong and insistent as ever.**

With the full winter circular on hard coal now in effect there has naturally been a temporary curtailment in business. However, anthracite occupies a strong position. An unusually large volume of orders has been carried over from the summer still unfilled; the retail trade is already beginning to tune up and the current month will see considerable activity. The high prices prevailing on bituminous is diverting some business to the smaller grades of hard coal.

Although there is a feeling in the bituminous trade that buyers have accumulated large advance stocks, it is probable now that the production about balances the demand and the realization of any one of the several impending favorable conditions, will precipitate a sharp advance. There is no question but what the seasonal average business on soft coal has been greatly exceeded, and if the market can be held steady over the next few weeks the colder weather will bring a natural support that will carry it through the balance of the season. However, the West Virginia grades are firmer in spite of excellent loading dispatch at the terminals, and it hardly seems possible that there can be any easing off in the buying power. The better grades generally are well filled up, and with the scarcity of labor and cars the market should have no difficulty in maintaining its position.

The demand for prompt coal from the Pittsburgh district in the Lake trade is good with moderate premiums being obtained. Some uncertainty is expressed over the future, but the present situation could not be improved upon, although it is probable that there is considerable buying in anticipation of the biennial wage agreement Apr. 1 next. The production is up to the full rated capacity, and the car supply fair. Rumors are current of a congestion at the head of the lakes, which may eventually divert considerable of the Pittsburgh district coal into other markets. As yet there is no apparent increase in the supply, however, and everyone continues to be short of coal.

The car shortage has become quite acute in Ohio and promises to interfere with the Lake shipping unless relief is obtained shortly. However, both steam and domestic grades are strong and a large tonnage is moving into the Northwest. A new advanced circular was put into effect Sept. 1. The dumpings at Hampton Roads were heavy during the week, principally in the New England trade, foreign shipments being relatively light. Vessels have been loaded promptly, although some agencies have been compelled to go into the spot market for tonnage to fill out their requirements; the car supply is much improved in this section. The demand in the Southern market is strong, with prices at a slightly higher level; the car shortage is causing some operators to fall behind on their contracts, and this is the worst feature in the local situation.

There is considerable pressure on the screenings market in the Middle West, but otherwise the trade is strong and indications are good for an excellent business this month. Producers generally have long-term contracts at satisfactory figures and are taking an optimistic view of the situation. Some trouble is being experienced in obtaining the desired kind of railroad equipment, and the possibility of labor trouble in certain districts is also adding an element of uncertainty to the situation. The mines in the Rocky Mountain regions are beginning to tune up to full capacity on improved conditions in the market; indications of a coming car shortage are noted by the scarcity of box cars.

### BOSTON, MASS.

**Pocahontas and New River slightly firmer, with ample business for the present. Georges Creek less plentiful. The better Pennsylvania grades practically unchanged. Anthracite unusually active for the season.**

**Bituminous**—The market on Pocahontas and New River this week is a shade firmer. Sales have been made rather freely at \$2.90 f.o.b. for coal to be taken in the next 30 days and this in spite of large receipts and excellent loading dis-

patch at all the terminals. Several of the agencies were expecting to be actively in pursuit of new business by this time, but orders still keep ahead of the output. At New England distributing points the supply about balances the demand. The outlook, therefore, is hopeful and any one of a number of things that might happen would be enough to send prices higher. It is generally felt, however, that buyers have all been laying in heavy advance stocks and that when their requirements in that direction are fully satisfied much of the buying power will be withdrawn. There is also a tendency to buy farther into the next contract year than has ordinarily been the case.

Arrivals here have been heavy the past week, 60,000 tons having been entered at the B. & M. wharf alone, this being about twice the normal figure. There has probably not been a time in recent years when mills and other corporations were so intent on accumulating coal. In Georges Creek there has been another spurt, so that supplies are less plentiful than a week ago. The demand from the line and offshore trade has been exceptional and for the present shipments to tide will be somewhat curtailed.

Pennsylvania coals are less heard from just now, but the price remains practically unchanged. Most of the operators have sufficient contract business in hand so they are not worrying much over spot coal. The quality grades are well sold up for the present, the output being still less than normal. There is much interest in the outlook this fall for Pennsylvania bituminous, but it is early to make predictions. It is rumored the all-rail sales have not been as heavy in proportion as those at tide-water and therefore that the winter months may show a mild flurry on rail coals when the tide-water trade is running along smoothly.

**Anthracite**—September opens with an unusually large volume of orders still unshipped and there is no doubt now that the hard-coal market will maintain its strong position throughout the season. Most dealers as well as such consumers as the large gas companies are running along on hand-to-mouth shipments of broken, and stocks of stove are not any too large. The retail trade is beginning to come in strong, and September is likely to be a heavy month for local deliveries.

Wholesale quotations on bituminous are about as follows:

	Clearfields	Cambria Somerset	Georges Creek	Pocahontas New River
Mines*	\$1.10@1.50	\$1.35@1.65	\$1.67@1.77	
Philadelphia*	2.35@2.75	2.60@2.90	2.92@3.02	
New York*	2.70@3.00	2.90@3.20	3.22@3.32	
Baltimore*			2.85@2.95	
Hampton Roads*				\$2.85@2.90
Boston†				3.83@3.93
Providence†				3.90@4.10

\*F.o.b. †On cars.

### NEW YORK

**Anthracite companies carrying small stocks of prepared sizes over. Stove and broken in short supply and pea becoming tighter. Soft coal shows a further stiffening due to car shortage and the holiday cessation of work.**

**Anthracite**—There seems to be little or no change in the anthracite situation at this time. Broken coal continues scarce; egg is a little easy, stove also scarce and chestnut plentiful. The demand for pea is getting strong on the line trade. Buckwheat is very plentiful, rice is becoming a drug and No. 3 Buckwheat while plentiful is improving. The companies are carrying little or no prepared coal in stock outside of chestnut and have but a moderate amount of small sizes in storage.

The hard-coal market is quoted on about the following basis.

	Upper Ports		Lower Ports	
	Circular	Individual	Circular	Individual
Broken.....	\$5.00		\$4.95	
Egg.....	5.25	\$5.15@5.25	5.20	\$5.10@5.20
Stove.....	5.25	5.25	5.20	5.20
Chestnut.....	5.50	5.25@5.50	5.45@5.15	5.25@5.45
Pea.....	3.50	3.35@3.50	3.45	3.30@3.45
Buckwheat.....	2.75	2.60@2.75	2.45@2.70	2.30@2.70
Rice.....	2.25	2.25	1.95@2.20	1.70@2.20
Barley.....	1.75	1.60@1.75	1.70	1.30@1.70

The Bituminous market seems to have strengthened somewhat over its condition of last week due no doubt to the



shortage of cars on the Pennsylvania Railroad Thursday and Saturday of last week and the holidays this week. Any weakness that appears in the market seems to be on coal standing at the piers unsold. All of the operating companies have plenty of orders at the mines and most of those producing higher grades of coal are unable to promise shipment for the next week or two. The demand is not strong. The New England market while steady is receiving a heavy tonnage and contracts are getting good attention. Lake shipments are continuing on a large basis but there is a feeling that the docks at the head of the lakes are getting filled up and shippers are under the impression that they may find it necessary to sell some coal in the Eastern market in the near future.

Gas coal is strong and firm as yet with slack scarcer than it has been and up about ten cents in price. The market is quotable on the following basis:

West Virginia steam, \$2.60@2.65, fair grades of Pennsylvania, \$2.70@2.75; good grades of Pennsylvania, \$2.80@2.85; best Miller Pennsylvania, \$3.10@3.20; George's Creek, \$3.15@3.25.

#### PHILADELPHIA, PENN.

**Anthracite market shows little or no improvement. Broken coal still a feature, with the demand good and supply deficient. The middle of September indicated as a possible turning point. Bituminous market a trifle easier; prices well maintained, but deliveries better.**

The first week in September, which is the initial month of the full circular prices, has not opened up in a particularly auspicious manner. Curtailed operations at the mines still continue effective, and except for the demand for broken and stove coal, there is practically no market. The high prices for bituminous has had the effect of creating a slightly better call for the steam sizes, but on the whole, there is no very marked improvement. Until the middle of September there is not likely to be any change for the better, this period generally being considered the ending of the summer dullness, and the beginning of fall activity.

The retail market still reports conditions to be anything but good. Odd lots here and there mark the return of the householders who have been absent during the heated term, and when the cool evenings make themselves manifest, business should pick up. The celebration of Old Home week at Mahanoy City has further curtailed the output of coal inasmuch as many of the collieries in the vicinity of that town suspended work in order to take part in the festivities.

The bituminous situation showed a tendency to ease off during the last week. Not that prices have in any way sagged, but there appeared to be a little more coal offering, and slightly better inducements offered in the way of prompt deliveries. Prices still range around \$1.15 to \$1.20 for almost any kind of coal, although there are reports of slack being sold at less than \$1.

#### PITTSBURGH, PENN.

**Coal production at full capacity. Prompt supply insufficient. Additional sales for the lake trade. Connellsville coke price maintained despite bear efforts. Hostetter Connellsville output in the market.**

**Bituminous**—Mines continue to operate at substantially full capacity, except for occasional stoppages like that of last Saturday, when the annual picnic of the miners of the Monongahela valley occurred and Labor Day this week. Car supply has been fairly good only, but is expected to be improved somewhat by the breathing spell given the railroads through these interruptions to mining. Demand for odd lots of coal continues fairly good, with offerings light. There has been a considerable demand for additional coal for lake shipment and \$1.35 has been readily obtained on such lots as could be spared.

On the whole the coal situation could hardly be better, though satisfaction over the heavy movement is tempered somewhat by reflection that a part of it is probably due to anticipation of an unusually severe contest over the biennial sale, which comes up for readjustment against the close of the present scale period, Mar. 31 next. We continue to quote regular prices, subject to premiums frequently for prompt coal: Slack, 90c.; nut and slack, \$1.05; nut, \$1.25; mine-run, \$1.30;  $\frac{3}{4}$ -in., \$1.40;  $1\frac{1}{4}$ -in. steam, \$1.50;  $1\frac{1}{4}$ -in. domestic, \$1.55, per ton at mine, Pittsburgh district.

**Connellsville Coke**—Recent rumors of irregularities in furnace coke prices when traced to their source seem to hinge partly upon the offering of coke under standard at eight cuts from the regular figure of \$2.50, and to the desire of a merchant house, so it is alleged, to break the market. The test of actual buying has brought out actual contracts for September at the full price of \$2.50, for standard grade coke, and a fair volume of prompt business has also

been done at this figure. Negotiations have been on the past few days which when concluded will probably cover all the furnace coke needed for September in addition to regular contracts, and at full prices for standard grade. The output of furnace coke, some 25,000 to 30,000 tons monthly, of the Hostetter-Connellsville Coke Co. controlled by the United States Steel Corporation, is temporarily on the market. The August tonnage was quietly disposed of at the full price, and a large part of the September output has already been closed, with negotiations on for the balance, all at the full figure. There are prospects that the coke will not be offered for October, being required by the steel corporation, and the absorption of this extra tonnage for August and September is taken as a clear indication of the strength of the market. We continue to quote: Prompt furnace, \$2.50; contract furnace, \$2.50; prompt foundry, \$3; contract foundry, \$3, per ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Aug. 23 at 369,476 tons, a decrease of 27,141 tons, and shipments at 269,323 tons, a decrease of 28,954 tons. The weekly average of production and shipments during the first half of the year was 410,000 tons, the average in July having been about 378,000 tons and thus far in August about 387,000 tons.

#### BALTIMORE, MD.

**Bituminous market remains excellent, the demand being far above the seasonal average. Anthracite business increasing, especially for assorted sizes.**

The soft-coal market remains exceptionally good for this time of the year. Not only is the seasonal average being surpassed, but instead of a cessation the demand seems to be on the increase. Most coal men are rather at a loss to explain the present state of business, but all agree that affairs are good just now. Prices remain firm, quotations generally being about on a par with those of the past week. Complaint is being made of a shortage of slack and still higher figures for that grade seem in store. As a matter of fact, if the market can be held steady for a few weeks longer the winter demand will open up.

There is only one discordant note to the present situation from a strictly local viewpoint, and that is that while loadings were fairly heavy at the piers the past week, a smaller number of charters than usual was announced. This slow down was in regard to coastwise and foreign business alike. Scarcity of miners is cutting a considerable figure at present, and this, with a renewal of the car scarcity, is preventing the tonnage movement from being quite as large as the present call for coal would seem to warrant.

Anthracite conditions are highly satisfactory. Quite a number of consumers who want assorted sizes are now urging prompt delivery. While all kinds of hard coal is to be had just now without especial difficulty, the experience of past years has taught many consumers that this may not be the case a month or so from now.

#### BUFFALO, N. Y.

**Some difference of opinion as to the outlook. Certain dealers are afraid the lake trade is running down. Local demand as heavy as ever. Coke weak.**

**Bituminous**—There is some difference of opinion as to the future of the bituminous trade, though none as to the continued strength of it here at present. A few dealers hear reports of a congestion on the upper-lake docks and say that much of the coal intended for that market will be diverted this way before long if the upper lakes are really getting in their full season's supply; but that is merely an inference as yet.

On the other hand it is stated that a certain large manufacturing concern has just asked for a supply of slack from now to April at \$1.25 f.o.b., without obtaining an offer. All that can be said of the actual situation here is that there is no weakening of prices and no increase in the supply. Practically everyone is short and there is no consignment coal on track anywhere within reach of this market. Operators can see nothing in the reported weakness. There is very little contracting. The consumers are offering what would look like good prices at almost any other time, but sellers are cautious; they do not know what to ask and besides they are afraid they would be unable to get the coal unless they control the mine. Even when they have mines behind them they have often contracted so much that they are obliged to go into the open market and buy at whatever is asked.

Still the shipper who predicts a \$2 price for slack before long is looked on as visionary; slack is much scarcer than it was awhile ago, but it would take a decided panic for it to make any such advance. Still it is difficult to say what will take place when the lakes close three months hence. Often there is a short flurry and the former prices are resumed.

Bituminous quotations will therefore have to be placed at former figures, \$2.90 for Pittsburgh lump, \$2.80 for three-quarter, \$2.65 for mine-run and \$2.15 for slack, with Allegheny Valley 15 to 20c. lower.

**Coke**—The coke trade is not strong, some jobbers reporting offers from the ovens at some reduction from former prices. It seems to be the idea, though, that prices are at the bottom, from the fact that there is still little stock coke offered. With best Connellsville foundry selling at \$4.65, f.o.b. Buffalo, stock prices are \$4.25, with off-grade 48-hr. furnace at about the stock price.

**Anthracite**—There is a slight stir in the local retail demand for anthracite and some of the rail lines are increasing their orders, but the business is not what the shippers expected. They say that it is bound to come all at once in a month or so, just as it has always done. Shippers of independent anthracite are selling a moderate amount of the smaller sizes at circular prices, but are not able to do anything with egg yet. Lake shipments of anthracite were 145,000 tons for the week, which is somewhat less than the summer average, on account of the scarcity of coal.

#### TOLEDO, OHIO

**Fears that a car shortage may interfere with the Lake movement. Railroads still feeling the effects of the spring floods. Prices firm and the demand strong.**

Toledo dealers are busy filling orders and watching their cars. There seems to be something of a shortage of cars at the mines, which has not as yet affected the lake business, but which shippers greatly fear will cut down the movement if it grows any worse. For some time past murmurs of a slight congestion has been coming in from the northern lines, but the first effects to be really felt here came during the past week.

Considerable fear is expressed at many points at the inability of the railroads to cope with the situation as fully as could be desired this season owing to the fact that they were badly crippled by the washouts occasioned by the March floods. There is a firm demand for steam coal and the domestic situation is favorable. Concerns are now busy filling contracts, including school and municipal contracts. Quite a number of large vessels cleared from the local docks during the past week and there are a few now awaiting accommodation.

Prices as quoted here follow:

	Pocahontas	Hocking	Jackson	Pomeroy	Massillon	Pitts.	Cambridge
Domestic lump.....	\$2.50	\$1.70	\$2.50	\$1.75	\$2.50	\$1.35	\$1.35
Egg.....	2.50	1.35	2.50	1.50	2.50	.....	.....
Nut.....	2.00	1.20	2.25	1.50	2.50	.....	.....
1 lump.....	.....	1.60	.....	.....	.....	1.25	1.25
Mine-run.....	1.60	1.35	.....	.....	.....	1.15	1.15
Slack.....	.....	0.70	.....	.....	.....	0.80	.....

#### COLUMBUS, OHIO

**Activity still characterizes the Ohio trade. The demand for domestic and steam grades is good and the tonnage moving to the Northwest large. An advance in prices was announced effective Sept. 1. Car shortage is increasing.**

The coal trade here during the past week has been active in every way. The new circular became effective Sept. 1, which boosts prices to a higher level and the demand for all grades is active. The tone of the market is satisfactory in every respect and operators, shippers and dealers look forward to a good trade for the remainder of the year.

About the only disturbing factor is the growing car shortage which is curtailing production in certain districts. In eastern Ohio the shortage is probably the worse and as a result the output during the week has been about 55 per cent. normal. There is also a lack of cars in the Pomeroy Bend district and the production there is estimated at 65 per cent. In the Hocking Valley and domestic producing fields the car supply has been better and a larger tonnage was produced.

The domestic trade is probably the strongest point in the market at this time. Dealers are gradually laying in stocks for the rush which is expected soon. There is a good demand for the splints and rescreened varieties. Large householders have placed their orders and deliveries are being made. One of the features of the domestic trade is the fact that winter fuel supplies are being laid in earlier than usual.

Steam business is also strong as manufacturing generally is in good condition; iron and steel plants are good purchasers of fuel and railroads are also buying a considerable tonnage. Very few steam contracts are expiring at this time and much of the tonnage is being purchased on the open market. The demand for the small sizes is strong and an advance has been made in the past week.

The lake trade is also active and will continue so right up to the close of navigation. The docks at the upper lake

ports are fairly free as the interior movement is good. Chartering of bottoms is being carried on actually and the tonnage shipped from Ohio ports during the past week shows a large increase over the previous week. The retail trade is good and dealers are busy taking care of small orders. Retail prices are higher in accordance with the advanced circular.

Quotations in the Ohio fields are as follows:

	Hocking	Pittsburg	Pomeroy	Kanawha
Domestic lump.....	\$1.75 @ 1.70	.....	\$1.85 @ 1.75	\$1.70 @ 1.65
3-4 inch.....	1.60 @ 1.55	\$1.30 @ 1.25	1.55 @ 1.60	1.55 @ 1.50
Nut.....	1.30 @ 1.20	.....	1.35 @ 1.30	.....
Mine-run.....	1.35 @ 1.25	1.20 @ 1.15	1.30 @ 1.25	1.25 @ 1.20
Nut, pea and slack..	0.80 @ 0.75	.....	0.70 @ 0.65	0.75 @ 0.70
Coarse slack.....	0.70 @ 0.65	0.75 @ 0.70	0.60 @ 0.55	0.65 @ 0.60

#### HAMPTON ROADS, VA.

**Heavy dumping particularly at Sewalls Point. Vessels being loaded promptly. Foreign shipments lighter, but coastwise heavier. Stronger demand inland.**

Dumpings over the tidewater piers for the week have been good. This is especially true as regards the movement from Sewalls Point, the loading at that pier being extra heavy and it is believed that a new record will be established this month. While the foreign movement has not been very satisfactory there have been some large shipments to the New England market. Practically all vessel tonnage arriving at Hampton Roads has been taken care of promptly although some of the suppliers have been compelled to go into the open market and purchase coal to apply on contract business.

Prices quoted for spot coal have been from \$2.80 to \$3, but it is impossible to ascertain whether any sales have been made at the latter figure. The demand inland has been fair, but only for New River and Pocahontas, and while there have been some sales of Kanawha and other high volatile coals, prices have not been very satisfactory.

Foreign shipments during the week have been to Para, Manos, St. Lucia, Cuban ports and Vera Cruz. The Atlantic fleet has been in the Roads some days taking in stores and a supply of bunker coal.

#### LOUISVILLE, KY.

**Demand continues strong. Car supply better and may effect an easier situation, shortly. Still a heavy movement into the Northwest. New rumors of an impending strike.**

The demand for all grades of coal continues strong, as might be expected with the approach of the Fall season. The shortage of cars, however, which threatened to further aggravate the situation, is showing every indication of improvement, and now seems to be indefinitely postponed. Mines in all parts of the state have been getting all the equipment they required, but whether this will continue, particularly with the heavy movement from eastern Kentucky into the Northwest, remains to be seen.

The movement into the Northwest, as noted, continues as heavy as before, and as this is almost entirely on contract, the indications are that it will continue steady throughout the season. There is also a good volume of domestic trade; dealers were rather conservative about putting in supplies during the summer, and with a fair demand now coming in from their customers their storage supplies are being rapidly cleaned up. In event of the anticipated shortage developing into a reality, many dealers will find they are unable to supply their customers.

The possibility of a strike is the most serious factor in the market at the present time. It is stated on reliable authority that a determined effort will be made to organize the miners in the eastern Kentucky field, and that recognition of the union will be enforced. Reports are to the effect that the move will be initiated on Oct. 1, and there have already been some preliminary skirmishes which have resulted favorably to the operators. There is no controversy in the matter of wages, the trouble hinging entirely on recognition of the union and the consequent closed shop.

Prices are now on the September basis, the better grades of block selling at \$2 to \$2.25, with block and lump at \$1.90 to \$2.15, round \$1.40 to \$1.50 and nut and slack at 70 to 85c. The second grades are quoted at from 10 to 25c. less and the demand is strong in all departments.

#### BIRMINGHAM, ALA.

**Demand strong and prices good, showing a slight advance. Car shortage causing some shippers to fall behind on contracts. Coke quiet but fairly steady.**

The coal and coke market here shows little change over last week; the demand is strong and prices good, with a slight advance. The car situation is still annoying the operators, as all mines are running on short time for lack of equipment, and contract shipments are slightly behind on this account. The Southern Railway has just closed a



contract with a Northern car works for 1720 fifty-ton all-steel cars, and 15 large freight locomotives, to be delivered as fast as possible; while this will not help the present situation, it will give this district additional equipment this winter, when it is most needed.

The coke market is quiet, especially on the foundry coke, and no improvement is looked for in this line until the pig-iron market picks up and furnaces now out of blast put back; this does not seem probable at a near date because of the low price of iron. The iron market is holding up well, sales being smaller than last week, but at better prices, which is a good indication that the market is steady.

#### NEW ORLEANS

**Dealers prepare for fall rush. Opening of cotton season causes gins to lay in fuel supplies. Exports to Latin American ports.**

Local dealers are getting their equipment in shape for the rush of fall business. Owing to the limited amount of fuel required for heating purposes in New Mexico, orders for domestic supplies do not begin until the middle of September. With the first cold snap, however, orders come in great volume.

Dealers in Alabama coal report the first pinches of actual car shortage. That this condition will grow steadily worse is practically certain. Operation of cotton gins throughout the state now is becoming general. Owing to the high prices of fuel oil many of the gins have returned to the use of coal.

Exports of coal during the week were to Frontera, Mex.; Ceiba, Honduras; Cape Gracias and Bluefields, Nicaragua; Puerto Barrios, Guatemala; Belize and Stann, Creek, British Honduras. All exports were in less than cargo shipments.

#### DETROIT, MICH.

**Market stronger than at any time during the summer. Stiffening particularly noticeable on the smaller sizes. West Virginia grades in heavy demand.**

**Bituminous**—Soft coal is still continuing to show a steady improvement and is much stronger right now than it has been at any time during the summer. The better grades are about the same as last week, but the smaller sizes have shown a tendency to stiffen still further with indications for a steady improvement, from now on; the demand for these sizes is in excess of the supply, and some large consumers who have crushers are being forced to make their own slack from the larger coal.

Both the West Virginia grades and three-fourths lump are also in excellent demand. The latter is being held rather closely at \$1.05 minimum, with mine-run the same and slack being quoted at 95c. to \$1; indications point to an advance to about \$1.10 on this last, before the middle of the current month. Prices on the domestic grades are steady with a hardening tendency, due to the heavy demand. Pocahontas is becoming quite scarce with the demand far in excess of the supply, so far as the local market is concerned.

The market is quotable on about the following basis, prices generally firm:

	W. Va. Split	Gas	Hock- ing	Cam- bridge	No. 8 Ohio	Poca- hontas	Jackson Hill
Domestic lump.....	\$1.65	....	\$1.75	....	....	\$2.75	\$2.50
Egg.....	1.65	....	1.75	....	....	2.75	2.50
Steam lump.....	1.50	....	....	....	....	....	....
3-in. lump.....	1.25	\$1.25	1.25	\$1.25	\$1.25	....	....
Mine-run.....	1.15	1.15	1.15	1.15	1.15	1.50	....
Slack.....	0.90	0.90	0.65	0.70	0.70	....	....

**Anthracite**—The anthracite market is beginning to show indications of some activity and this business from now on will depend entirely on weather conditions. A premium of 25c. is being asked in occasional instances on stove and egg.

**Coke**—Coke producers are holding firm at \$3, sales involving several thousand tons, having been concluded on this basis during the past two weeks. Semet Solvay is now quoted at \$3, Connellsville \$3 and gas house \$2.75.

#### INDIANAPOLIS, IND.

**August showed considerable improvement over July. Screenings weak but the outlook on the whole is excellent. Summer buying heavier than usual.**

August has shown considerable improvement over July in the volume of business in the coal fields of Indiana, mines having come much nearer a full running schedule. There is car trouble at many operations, which are long on hoppers and short on gondolas, but the railroads say they can do better now on gondolas.

The industrial situation is mixed but on the whole satisfactory. August is a vacation month, a time for inventories and for overhauling in many manufacturing establishments. It has also been an exceedingly hot month in Indiana and this factor alone has something to do with a falling off in

the demand for screenings, which grade is now pressing for sale. The coal men have made large contracts and they speak optimistically of the outlook. The retail business continues good. Apparently there has been more than the usual summer buying. Retailers have bought better than their customers, at that, and are long on Eastern coals, particularly Pocahontas.

Mine quotations are around the following figures:

No. 4 screenings.....	\$0.60	Egg.....	\$1.50
Nos. 5 and 6 screenings.....	0.50	4-in. domestic.....	1.60
No. 4 mine-run.....	1.15	Brazil block.....	2.20
Nos. 5 and 6 mine-run.....	1.10	Washed coal.....	1.75 @ 2.25
1½-in. steam lump and nut.....	1.30		

#### CHICAGO

**Large buyers, keeping out of the market, have forced screenings down to 45c. Franklin County operators have advanced prices and report satisfactory sales. Prices for smokeless coals are strong. A slight weakness in the domestic coke trade is noted.**

A marked drop in the volume of business in the steam coal market in Chicago has been noted within the past week. As a result of action taken by a number of the large buyers in keeping their orders off the market, screenings were reduced, on the average, to 45c. a ton.

Despite the action of the Franklin County operators in advancing prices for lump, egg and nut coal to \$1.75 a ton, the mines, sales of that fuel generally have been satisfactory. In the Carterville district, the operators are divided into two groups. The majority of the standard mines in that field are charging \$1.50 a ton, but there are a few which are obtaining \$1.60. There has been a slight softening in the market so far as the domestic coke trade is concerned. As a rule, prices for gas-house coke are easy.

Prices for smokeless coal continue strong, mine-run selling at \$1.50 to \$1.65. The circular price on lump and egg coal is \$2.25 with sellers of free tonnage obtaining \$2.50. A price of \$1.60 a ton is being asked for inferior grades of 1½-in. Hocking lump, the standard producers, however, obtaining \$1.70.

Prevailing prices at Chicago are:

	Springfield	Franklin Co.	Clinton	W. Va.
Domestic lump.....	\$2.07@2.32	\$2.55@2.80	\$2.27	
Steam lump.....	1.92		2.07	
Egg.....		2.55@2.80		\$4.30@4.55
Mine-run.....	1.82	2.30	1.87	3.55@3.65
Screenings.....	1.22@1.32	1.60@1.75	1.22@1.32	

**Coke**—Connellsville, \$5.50; Wise County, \$5.25@5.50; by-product, egg, stove and nut, \$4.75@4.85; gas house, \$4.65@4.75.

#### ST. LOUIS, MO.

**Indications splendid for a good September business. Prices advancing on all except Standard. Car shortage still prevailing. Anthracite weak, with smokeless and coke normal.**

Prospects were never brighter for a good month in the coal trade than they are at this time. There is some uncertainty, however, as to just how much coal will be offered. The first few days of the month practically none was produced in southern Illinois, on account of the holidays; also, several mines were tied up by petty grievances on the part of the miners, and there has been an extraordinarily large advance sale of screened sizes, so that up to Sept. 10 or 15 there will be practically no coal to offer, and the car shortage will be severe enough by that time to steady up the market.

Coal in the Standard field is still being sold at about cost. Screenings are down to 30c. and mine-run has been offered the past week for 75c. There is no hope for any money in this field until the car shortage curtails work to about two days per week and there is an extraordinary good demand.

Anthracite is still moving in at from 25 to 30c. under the circular. There has been a fairly good demand for smokeless the past week, and coke is moving a little more freely than it has for a month. There is absolutely no washed coal market here at the present time.

The circular prices are:

	Carterville and Franklin Co.	Big Muddy	Mt. Olive	Standard
2-in. lump.....	.....	.....	.....	\$1.00@1.10
3-in. lump.....	.....	.....	.....	1.30
6-in. lump.....	\$1.70 @ 1.85	.....	1.50	1.25@1.35
Lump and egg.....	1.50 @ 1.60	\$2.15	1.60	.....
No. 1 nut.....	1.30 @ 1.40	.....	1.05	0.87½
Screenings.....	0.55	.....	0.40	0.85
Mine-run.....	1.50	.....	.....	0.75
No. 1 washed nut.....	1.60	.....	1.60	.....
No. 2 washed nut.....	1.35	.....	1.50	.....
No. 3 washed nut.....	1.20	.....	.....	.....
No. 4 washed nut.....	1.00	.....	.....	.....
No. 5 washed nut.....	0.60	.....	.....	.....

## OGDEN, UTAH

Market conditions improving slowly, with mines gradually reaching capacity. First indications of a car shortage appear, with a scarcity of box cars. Mine price advanced Sept. 1.

August has gone down on record as a month presenting new and peculiar conditions in the coal market. The usual storage period ended on Aug. 1, with little coal in stock, although the operators expected August to be a very busy month. Anticipating this the mine price was increased 25c. by some producers, and 50c. by others, although the latter was shortly reduced to the 25c. advance. Those operators who advanced to 50c. expected the dealer and consumer to buy heavily during August, but in the early part of the month it became apparent that the market was still in a sluggish condition and buyers not ready to place orders. The territory has been worked and reworked by all the salesmen, with only moderate results. No large orders are being placed and most of the coal bought is for immediate use.

Most of the mines were able to run at a little better than half time during the last week in August, showing some encouragement. Owing to a better demand for lump, some operations are getting a little long on nut, and indications are that there will be a surplus of this grade during September.

All the sugar factories have completed shipments on their storage orders for slack and very little coal will be consigned to them during the first half of September, which will no doubt cause a surplus of this grade. The first indications of a shortage of coal equipment occurred Aug. 29, when the mines were compelled to load commercial coal in open cars, the railroads being short of box cars. The intermountain territory has a large crop this year, and most of the closed cars will be used in handling the crop.

The new circular went in effect Sept. 1, the market now being quotable on the following basis: Lump, \$2.75; egg, \$2.50; nut, \$2.25; mine-run, \$1.85; slack, \$1.

## PORTLAND, ORE.

No material change in coal situation here the past week. Indications favor fair volume of business in the fall.

There has been practically no change in the coal situation here the past week. The volume of business is light, as is to be expected, at this time, but dealers look for an improvement in the movement in the near future with preparations for the winter season. Prices remain unchanged for the present with no indication of any occurring until winter quotations go into effect, which will mean \$1 additional per ton, as compared with the summer rates. There is no indication of importations of Australian coal this fall.

## PRODUCTION AND TRANSPORTATION STATISTICS

## BALTIMORE &amp; OHIO

The following is a comparative statement of the coal and coke movement over this road for July and the first seven months of this year and last year:

	July		Seven Months	
	1913	1912	1913	1912
Coal.....	2,938,723	2,519,881	19,604,691	17,668,329
Coke.....	391,485	368,720	2,839,373	2,653,612
Total.....	3,330,208	2,888,601	22,444,064	20,321,941

## FOREIGN MARKETS

## GREAT BRITAIN

Aug. 20—For early loading admiralty coals are almost unobtainable. Enquiries for forward loading are more numerous and firm prices are quoted. Quotations are approximately as follows:

Best Welsh steam.....	\$4.98@5.04	Best Monmouthshires..	\$4.20@4.26
Best seconds.....	4.74@4.86	Seconds.....	4.02@4.08
Seconds.....	4.62@4.74	Best Cardiff smalls....	2.76@2.88
Best dry coals.....	4.32@4.56	Seconds.....	2.46@2.58

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while these for Monmouthshire descriptions are f.o.b. Newport; both exclusive of wharfage, and for cash in 30 days.

**British Exports**—The following is a comparative statement of British exports for July and the first seven months of the last three years, in long tons:

	July		7 Months		
	1912	1913	1911	1912	1913
Anthracite.....	304,022	295,993	1,366,747	1,278,215	1,703,090
Steam.....	4,961,888	5,056,308	26,427,909	23,682,045	31,090,553
Gas.....	1,260,008	1,114,572	5,958,632	5,747,845	6,624,980
Household.....	161,813	168,061	829,466	802,268	1,023,436
Other sorts.....	354,135	340,277	1,790,763	1,704,806	2,059,387
Total.....	7,041,866	6,975,211	36,373,517	33,215,189	42,501,446
Coke.....	85,978	99,605	545,210	474,086	599,275
Manufactured fuel	191,945	200,814	981,094	327,228	1,223,046
Grand total....	7,319,789	7,275,630	37,899,821	34,516,503	44,323,767
Bunker coal.....	1,632,501	1,883,676		9,758,398	11,970,713

## COAL SECURITIES

The following table gives the range of various active coal securities and dividends paid during the week ending Aug. 29:

Stocks	Week's Range			Year's Range	
	High	Low	Last	High	Low
American Coal Products.....	83	83	83	87	80
American Coal Products Pref.....			105	109	105
Colorado Fuel & Iron.....	33	31	32	41	24
Colorado Fuel & Iron Pref.....			155	155	150
Consolidation Coal of Maryland.....	102	102	102	102	102
Lehigh Valley Coal Sales.....	210	195	200		
Island Creek Coal Com.....	53	52	53	53	47
Island Creek Coal Pref.....	85	84	85	85	80
Pittsburgh Coal.....	20	19	20	24	14
Pittsburgh Coal Pref.....	85	84	85	95	73
Pond Creek.....	20	20	20	23	16
Reading.....	163	160	162	168	151
Reading 1st Pref.....	84	84	84	92	84
Reading 2nd Pref.....			88	95	84
Virginia Iron, Coal & Coke.....	39	39	39	54	37

Bonds	Closing		Week's Range		Year's Range	
	Bid	Asked	or Last Sale		High	Low
Colo. F. & I. gen. s.f.g. 5s.....	93	Sale	93	93	93	99
Colo. F. & I. gen. 6s.....	103	106	107	June '12		
Col. Ind. 1st & coll. 5s. gu.....	83	Sale	83	83	77	85
Cons. Ind. Coal Me. 1st 5s.....	76	78	76	26	76	76
Cons. Coal 1st and ref. 5s.....		92	93	Oct. '12		
Gr. Riv. Coal & C. 1st g 6s.....			102	April '06		
K. & H. C. & C. 1st s f g 5s.....	91		98	Jan. '13	98	98
Poah. Con. Coll. 1st s f 5s.....		85	86	June '13	86	87
St. L. Rky. Mt. & Pac. 1st 5s.....	77	80	78	78	73	80
Tenn. Coal gen. 5s.....		99	98	Aug. '13	98	103
Birm. Div. 1st consol. 6s.....	100	102	100	Aug. '13	100	103
Tenn. Div. 1st g 6s.....	100	102	100	July '13	100	102
Cah. C. M. Co. 1st g 6s.....			103	July '13	103	103
Utah Fuel 1st g 5s.....						
Victor Fuel 1st s f 5s.....		80	80	May '13	79	80
Va. I. Coal & Coke 1st g 5s.....	92	93	92	Aug. '13	92	98

No Important Dividends were announced during the week.

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**American Coal Products Co.**—The common stock of this concern amounts to \$50,000,000 of which \$10,539,300 are outstanding; the authorized preferred is \$5,000,000, 7% cumulative of which \$2,500,000 are outstanding and are redeemable after three years at 120. It is provided that the full paid common stock must always be not less than twice the preferred stock and that no additional mortgage or bonded debt can be placed against the property or its subsidiaries without the consent of two-thirds of the stockholders. The company paid regular dividends of 5½% from the time of its organization up to Oct., 1909; in 1910 it paid 6%; 6½% in 1911, and 7% in 1912.

**Colorado Fuel & Iron Co.**—The disastrous result of the strike, which this company went through in 1903, caused the report for the year ended June 30, 1904, to show the lowest earnings in the history of the company. Last year the company did nearly three times as much business as in 1904; during this latter year the company earned sufficient to pay off the \$1,500,000 accrued dividends and leave a balance of approximately \$300,000.

## COAL FREIGHT DECISIONS

**Fourth Section Applications Nos. 774 and 5301.**—In the matter of coal rates from the anthracite fields to points on the New Haven R.R.

Respondent allowed to make a less charge than is made to intermediate points on prepared sizes of anthracite coal, all-rail, from mines in the anthracite region to Boston, Needham, Needham Heights, and Newton Upper Falls, Mass. Opinion No. 2419.